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The Arthur E. Mills Memorial Oration.[1]

THE CHANGING ASPECTS OF MEDICINE.

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IN selecting the subject for this memorial oration, I have, of course, committed myself to a theme which could engage our attention during a number of prolonged discussions. In the first place, the changes themselves—increase in knowledge, developments in medical and surgical techniques, new discoveries in drugs and chemical compounds, new ideas in medical organization—are very numerous. In the second place, since blessings in this life seldom come unmixed, these remarkable changes have brought with them new challenges and problems which affect members of the medical profession as practitioners, as teachers and as citizens. Both aspects of the subject—the facts of change and the results—are of great importance, and although only brief comment will be possible, it is of both aspects than I plan to speak.

Although I would be the first to agree that this topic is far too big for one speaker on one occasion, it has seemed to me appropriate to choose such a far-reaching subject to present to this special gathering. We have met today, at the summons of The Royal Australasian College of Physicians, to do honour to the memory of Dr. Arthur E. Mills, who served as Professor of Medicine in the University of Sydney and as Deputy Chancellor of that University. The occasion pays tribute to Dr. Mills's devotion to both the private duties and the public responsibilities of his profession, and I hope that he would have approved a choice of subject which attempts to summarize those aspects of contemporary medicine which directly affect such duties and responsibilities in all our lives.

Finally, it seems to me necessary that we should, from time to time, pause to make such a survey of our medical world. I suppose that mankind, in every age, has been convinced that life was changing at a terrifying pace; but surely we are justified in feeling that we are called upon to cope with a period of particularly rapid acceleration.

The history of medicine reveals a continuous growth in medical knowledge since the days of Hippocrates, but the rate of that growth has shown an uneven curve. There have been periods of rapid advances followed by longer periods during which little change has been recorded. A similar change can be noted in the course of modern medicine of the past century; there are peaks and valleys in the curve of the advance of medical knowledge. In

[1] Delivered at a meeting of The Royal Australasian College of Physicians, Wellington, New Zealand, March 21, 1956.

more recent times since the turn of this century, and particularly during the last twenty-five years, the rate in the increase of our knowledge has accelerated and the curve shows a steep ascent with no apparent recession. We find ourselves literally "snowed under" by the tremendous impact of the accumulation of this knowledge which, even as it achieves spectacular results, is creating fresh problems in the world of medicine.

In order to summarize some of these developments and refer briefly to some of these problems, let us, for the moment, divide this world of medicine into its three parts: preventive medicine and public health; curative medicine, which includes the diagnostic and therapeutic measures used in medical practice; and rehabilitation, which refers both to the restoration of the sick or disabled person to his maximum ability, and to the alleviation of some of the problems of old age.

The advances of preventive medicine are well known, and we have come to accept the fact that small-pox, typhoid fever, diphtheria, tetanus and many other infectious diseases can be controlled by immunological procedures. It is true that such acceptance is not complete on the part of the public; there are still conscientious objectors who resist the application of these health measures, and people who are afraid of procedures which they seem to regard as still in the experimental stage. In this regard, sympathetic understanding of such attitudes and a continuous programme of education for acceptance are important. For instance, we all hope that the newest vaccine, the one for poliomyelitis, will prove as effective as the early results would seem to indicate; but, obviously, there is still work to be done both on the vaccine itself and in the establishment of public confidence in its effectiveness. On the other hand, such a programme of education for acceptance in combination with the development of preventive and curative measures has already proved itself in the treatment of tuberculosis. There has been some progress in the development of active immunity, and much rapid advance in the processes of treatment with antibiotics and other antituberculosis remedies and in chest surgery. These developments, combined with greater understanding of the problem in the minds of the general public, are producing excellent results in the control of this infection.

The acceptance of public health measures has increased over the years, until now there is comparatively little public resistance to those safeguards necessary for the maintenance of pure water and pure milk supplies. The cry of interference with personal liberty has been drowned in the demand for the well-founded regulations that ensure the protection of the public health.

Some of the most outstanding advances in medical knowledge are those which have affected the practice of curative medicine, including the various specialties and sub-specialties.

Insulin was discovered in the early 1920's and the whole picture of the treatment of diabetes changed toward what it is today. Not long after, the discovery of liver extract for the treatment of pernicious anæmia converted that formerly fatal condition into one which can be held in check indefinitely. The refinement in liver therapy, first with the concentrated liver extract and later with vitamin B_{12}, has improved our ability to treat these patients.

The treatment of various infections, particularly the pyogenic infections, was immeasurably improved by the introduction of the sulphonamide compounds, which first appeared about eighteen years ago. After the introduction of the first of the sulphonamide preparations, improvements followed rapidly. It should, however, be remembered that in the use of these preparations some dangers always remained because of hypersensitivity and the possibility of toxic reactions affecting the skin, the bone marrow, and in some cases the kidney.

The development of antibiotics in the early 1940's brought a better, safer and more effective method of treating infections. Penicillin, the first of the antibiotics introduced as a result of the discovery by Fleming and the practical preparation by Florey, was of the greatest value in World War II, and was undoubtedly responsible for saving many lives. Other antibiotics were rapidly developed, and today a large number are known, of which some 10 to 15 are in general clinical use. Again, the warning must be sounded that, although these antibiotics are much less toxic than the sulphonamide compounds, they do at times act as allergens, and are capable of causing urticaria, asthma or even sudden death. In this connexion it should be added that bacterial resistance to antibiotics, a most interesting example of biological adaptation, is another recent development which will have further effect on the use of these preparations.

In a day of superlatives, it is natural to find new preparations hailed as "miracle" drugs. The latest "miracles" are the steroids, corticotropin (ACTH) and cortisone, and their newer derivatives. From the clinical standpoint, the use of an adrenal cortical stimulating hormone preceded by several years the use of one of the adrenal hormones—cortisone. The latter preparation was first brought forward by Hench and his associates at the Mayo Clinic for the treatment of acute rheumatic fever and rheumatoid arthritis. Subsequent studies have shown that in the treatment of acute rheumatic fever, results with salicylates are just about as good as those achieved by cortisone. However, the advantages of steroid therapy in rheumatoid arthritis are well known, and the lot of sufferers from this chronic condition has been much ameliorated by cortisone and by such newer preparations as hydrocortisone, prednisone and prednisolone. Both ACTH and cortisone have a place in the treatment of other conditions, including certain allergies and some dermatological and hæmatological disorders. It is also true that these steroids play an important role in the treatment of the group of related collagen diseases.

The interest aroused by Herrick's description of coronary thrombosis as the cause of myocardial infarction, focused attention on the use of the electrocardiograph. The diagnosis of myocardial infarction is now a commonplace one made by medical students and house officers. The electrocardiogram has become an indispensable part of any complete heart examination and should be part of every complete examination of any individual aged more than fifty years. The tracing is the most accurate method we have of detecting evidence of coronary sclerosis with resulting effect on the heart muscles, and it is of course indispensable in the diagnosis of arrhythmias.

Here again it is necessary to remind ourselves that the electrocardiograph is an instrument of precision of undoubted value, but there are times when it would seem to have done as much harm as good. In the hands of the inexperienced the interpretation of cardiograms may prove most difficult. The reading of too much significance into minor deviations from the normal has resulted in many a patient being treated for heart disease which did not exist. In such a situation the value of knowing the patient as a "whole", of being aware of all circumstances contributing to his condition, cannot be over-stressed.

X rays were introduced at the end of the nineteenth century, but it was not until the 1920's and later that the full diagnostic value of their use was developed, and the diagnostic facilities available to us in the modern X-ray department are a great advance over those of thirty years ago. The benefits of cholecystograms, intravenous pyelograms, arteriograms—cerebral and peripheral—are now so taken for granted that we give little thought to the difficulties encountered before their use. In the field of heart disease, X-ray examination has been of the greatest assistance, not only in the routine study by fluoroscopy or films, but also in the more recent development of cardiac catheterization, which is a boon in the diagnosis and study of some forms of heart disease, and from which pressure variations and levels of oxygen saturation can be determined.

An even more recent advance, which we owe to the atomic age, is the medical use of radioactive isotopes. These materials, as is well known, are ordinary substances to which radioactivity is imparted by exposure to a source of radiation such as a cyclotron or a uranium pile. The

radioactivity thus imparted is not permanent; its duration is measured in terms of half-life, and this period may vary from a few hours to many years.

The radioactive isotopes used in clinical medicine include iodine, phosphorus, gold and chromium. Many other tagged elements, including sodium, iron and carbon, are in general use for research purposes. The use of these materials requires highly specialized laboratory equipment, including the necessary electronic devices to measure and control their application and the employment of specially trained personnel.

It is impossible to estimate the results which may accrue from the harnessing of this new giant power; but to mention only one example, it is already known that the use of radioactive iodine has provided great advance in the diagnosis of hyperthyroidism and in the treatment of certain forms of goitre.

The supply of new materials which the practitioner may employ in the treatment of his patients is almost as overwhelming as the rapid accumulation of medical knowledge as a whole. In a recent article, Barr (1955) pointed out that the rate of addition to these preparations may be realized from the fact that in 1953, 14,000 new substances were made available, and these were added to a list of ten times that number—that is, of 140,000 medicaments already available to practitioners. Accretion, Barr tells us, is still far greater than deletion, although 90% of the drugs now in common use have been introduced in the last twenty-five years.

In the same article Barr stresses the hazards of modern diagnosis and therapy which may result from this "deluge of new drugs". Some of them, as he points out, are really old drugs slightly modified, and these may carry with them dangers which were recognized and avoided in the older preparations. He reminds us that the first dictum of our profession must always read: "Be sure you do no harm." In such a plethora of chemical contributions, Pope's old couplet is still applicable:

> Be not the first by whom the new is tried,
> Nor yet the last to lay the old aside.

My references to new discoveries have been focused on medicine rather than on surgery, but I must not fail to include the amazing strides made by our surgical colleagues in their ability to overcome the effects of accident and disease. The experiences of World War II led to great advances in methods of handling serious injury. Better control of shock, increased use of blood and blood substitutes, and better anæsthesia resulted in far greater salvage of life. Many of those so seriously injured that their wounds would formerly have been fatal made a complete recovery. Antibiotics were, of course, of the greatest value in controlling associated infection. Such military experiences have been applied to civilian practice in which, because of the increased frequency of accidents, we are faced with a multiplicity of problems in the treatment and rehabilitation of the seriously injured.

Other notable surgical advances, which are also dependent upon better anæsthesia, better methods of combating shock, and more daring techniques, have permitted an expansion of the field of cardiac and pulmonary surgery which is almost unbelievable to an older practitioner. That a surgeon can with impunity incise and suture the heart itself, open a stenosed valve by means of an inserted finger or with a knife, actually remove a cuff from the coarcted aorta, suture the cut ends of that vessel together and leave a functionally competent artery—this represents an advance which our forebears would have regarded as impossible. In chest surgery, in the course of a pneumonectomy, the branch of the pulmonary artery to one lung can be ligated without disturbance; yet if that same vessel is suddenly occluded by embolism or thrombosis the results are disastrous if not fatal. Indeed, the surgical treatment of pulmonary tuberculosis coupled with modern medical treatment has brought about a complete change in the whole picture of that serious condition.

Another advance has been in the more extensive surgery for malignant disease, for which radical measures, which are by no means always advisable, are now possible. The increased proficiency of surgical techniques is indicated by the fact that the surgeon can perform these extensive procedures and have the patient survive. The recent use of hypothermia has permitted operations on the central nervous system and on the heart that were formerly impossible. In neurosurgery there has been particular advance in the surgical treatment of vascular lesions.

In obstetrics there is great improvement in our ability to handle the problems of heart disease and diabetes in pregnancy, and more recently in the use of hypotensive drugs in the toxæmias. In gynæcology probably the outstanding development has been in cytology.

In pædiatrics the greatest advances in recent years have been in the use of antibiotics, in improved nutrition, and in mental hygiene. The use of antibiotics has reduced the mortality of bronchopneumonia in the first year of life from 85% to less than 1%. The average six-year-old child is one and a half inches taller and weighs five pounds more than a child of the same age twenty years ago. Extensive work has been done in the study of behaviour problems in school children and teen-agers, and much help is available in these fields if parents and others will make use of it.

Psychiatry has shown corresponding changes, and the mentally ill need no longer be consigned to institutions for custodial care only. Shock therapy and the use of the newer "tranquillizing" drugs have much to offer, and surgery through lobotomy can often do much to ameliorate the psychotic state.

Many of these discoveries and advances have contributed to the expansion of the third phase of medicine—rehabilitation. This process may be defined as the end-product resulting from the integration and coordination of medical, psychological, social and vocational services blended together to surmount effectively all the problems encountered by the sick or injured person, or to alleviate some of the conditions of old age.

Our understanding of the need for rehabilitation services and of the range of resources which must be utilized if the process is to be successful is in itself one of the changing aspects of contemporary medicine. Interest in problems of rehabilitation received great impetus during World War II, when many of our service personnel, whose lives had been saved by new methods of handling severe injuries, were left with serious orthopædic disabilities requiring the use of such techniques. Continued advances in therapy, both medical and surgical, and increase in the frequency of accidents in the home, in industry and on the highways, emphasize the fact that rehabilitation is the leading health problem facing the medical profession and our communities today.

It is, I think, fair to say that our profession has been slower to recognize and assume its responsibilities in this field than in other phases of medicine. The delay may be attributed partly to the point already made, that the recognition of the importance of rehabilitation is a fairly recent development, and partly to an impression that the processes of rehabilitation belong to the later stages of convalescence. Actually, to obtain the most successful results, rehabilitation should be started as soon as the patient has recovered from the acute stage of his illness or the immediate effects of his accident. There is room for more general understanding and use of the processes of rehabilitation among medical practitioners, and there is increasing need for a much larger number of physiotherapists, occupational therapists, speech therapists, psychologists, vocational counsellors and placement officers.

The need for certain types of rehabilitation services must also be noted as one of the results of the increasing longevity of twentieth-century man. Life expectancy is increasing all over the world. To mention only a few statistics: in North America, between 1900 and 1950, Canada and the United States have shown increases of life expectancy at birth of 17·6 years for men (to 65·6 years) and 20·2 years for women (to 70·2 years), and Australia reports similar figures.

We are cheered by the thought that this increase in the life span is one of the benefits resulting from all this new knowledge we have been discussing; but we cannot ignore the fact that disabilities increase with age, and that the presence of larger numbers of senior citizens in our communities emphasizes the importance of developing rehabilitation services adapted to their needs.

Even so brief a summary of the changing aspects of medicine in our time makes it clear that I cannot pay tribute to more than a few of the men and women whose brains and hands (and I think we may say their hearts also) have been concerned with these developments. To offer a comprehensive list I should have to range the world, for medicine is international and knows no boundaries; even the Iron Curtain is not impenetrable to the ebb and flow of medical ideas. It is true that many of the contributions I have noted, particularly those made during the last quarter of a century, have come from English-speaking countries; but even if I narrowed my tribute to this group it would still be too long for any one speech. And when I gladly confine myself to the group it is most appropriate to name today—when I list only the contributions made by members of the medical profession of Australia and New Zealand—I am confronted by the same difficulty: my list is far too long. While it is true that some of these contributions have been made by doctors after they had moved elsewhere, their birthplace has a right to full credit. The extent of their additions to our knowledge is enormous in comparison with the population of Australasia. I must be satisfied, however, with mentioning only a few of the many names on your roll of honour.

Heading the list, because of the number of lives saved or changed, is Sir Howard Florey, who must be given full credit for putting penicillin to work. A Rhodes Scholar from South Australia, he is now Professor of Pathology at Oxford University. Another Rhodes Scholar from the same State was Sir Hugh Cairns, a pupil of the late Harvey Cushing in neurosurgery and, at the time of his premature death, Nuffield Professor of Surgery at Oxford University. Professor Brian M. Windeyer, a graduate of the University of Sydney, now Director of the Meyerstein Institute of Radiotherapy, Middlesex Hospital, London, and Professor of Radiology in the University of London, is one of the world's leading authorities on radiation therapy. Another international figure, cardiologist, and author, is Dr. Paul Wood, of Melbourne, now Director of the Institute of Cardiology, London. Dr. R. A. Willis, of Melbourne, now Professor of Pathology at the University of Leeds, is also the author of several books, including "The Spread of Tumours in the Human Body". Sir Thomas Dunhill, also of Melbourne, is a leading English surgeon of Saint Bartholomew's Hospital and Surgeon Extraordinary to Her Majesty the Queen.

New Zealand has contributed two of the leading authorities in plastic surgery in the persons of Sir Harold Gillies and Sir Archibald McIndoe. Nor must I forget to mention such physiologists as the late Professor Frank Cotton, of Sydney, and Professor J. C. Eccles, of Canberra. Your virologist, Sir Macfarlane Burnet, has done outstanding work, especially in poliomyelitis. Sir Norman Gregg has received world-wide credit for his contribution to the effect of rubella on the fœtus.

The early work of Hunter and Royle on the surgery of the sympathetic nervous system attracted world-wide attention. Sir Grafton Elliot Smith was Professor of Anatomy at Cairo, and a widely known athropologist.

In neurology, your contributors include J. W. Adey, A. W. Campbell, E. Graeme Robertson, W. Lister Reid, and A. A. Abbie; in tropical diseases you have Sir Neil Hamilton Fairley; in hydatid disease, Professor Sir Harold Dew; and in arteriosclerosis and hypertension, Frank Byrom. One of your most recent contributors to the sum of human knowledge is Dr. F. H. Smirk, who has received world attention for his work on hypertension, as has Sir Charles Hercus for his work on diseases of the thyroid.

Many of your medical men have also been responsible for advances in other activities, as for example Sir Earle Page, recent Minister of Health in Australia; Dr. Mervyn Archdall, Editor of THE MEDICAL JOURNAL OF AUSTRALIA; and Dr. J. O. Mercer, Editor of *The New Zealand Medical Journal*.

No mention of Australasian medicine would be complete without comment on the amazing medical care made available to the vast interior of Australia by the Flying Doctor Service. A scheme made necessary by the distances involved, it is but another example of the resourcefulness of your people.

I am tempted to remain in this happy atmosphere of admiration within the family circle, but it is time to return to the second part of my subject—the undoubted fact that this widening of our fields of knowledge, these changing aspects of contemporary medicine in all its phases, has resulted in challenges and problems which affect medical education on all its levels, and also the practice and organization of medical services.

Let us look first at medical education, which is affected at the undergraduate, graduate and post-graduate levels. The statement that such education must be a continuing process started in the medical school and carried on throughout a doctor's professional career is not new, but it takes on added significance in the pressures of the present time. In an attempt to handle the accumulation of knowledge, some schools have added a year to the medical course—a proceeding which has, of course, been accompanied by the usual argument as to whether that year should be included in the pre-clinical or the clinical period. But in North America, where the medical course at the university level now varies from six to seven years or more, most educators agree that another year cannot be added. Therefore, the curriculum must be adjusted and readjusted to include all the newer knowledge.

Another problem is created by the fact that medical teaching, particularly in the clinical years, is given largely by the younger teachers, each of whom is apt to be trained in one of the sub-specialties. The result is to emphasize the newer sub-specialties at the expense of the teaching of more basic fundamentals, such as the examination and understanding of the patient as a whole, by means of an adequately taken history and a thorough physical examination. Bedside medicine is suffering from the invasion of laboratory methods and techniques. Our medical students and house officers often seek to defer the presentation of a patient until the "work-up" is complete—the "work-up" usually meaning the accumulation of the results of a number of tests from the clinical laboratory and the X-ray department.

Graduate training is that given after a student has received his medical qualifications, and is aimed at preparing him for higher academic degrees, for teaching, or for certification for specialist practice. Here, too, we find an intensification of the effect of the contact with the recently trained specialists in the narrower fields, and the consequent danger that the whole may be lost in the concentration on a part.

Inevitably the accumulation of all this new knowledge has its effects on the practice of medicine. We find more and more of our younger men tending to show interest in and to become specialists in a narrower rather than a broader field of medicine or surgery. This tendency is shown in examinations for higher certification, when examiners find our younger specialists fully qualified to discuss, for example, electrolytes, but unable to perform an adequate physical examination. Such men may know the normal values for a group of liver function tests, but they miss a pleural cavity full of fluid. The question may well be asked as to whether present-day training is capable of turning out an Osler, an Allbutt or a Horder, or is more likely to produce a group of men equipped only to practise individually in a much more limited way.

At the post-graduate level we find that the impact of our rapidly accumulating knowledge is making more adequate methods of training essential if we are to maintain the highest standards of practice. Post-graduate training is a broad subject, and must include provision for

the needs of both general practitioner and specialist. The methods by which it is achieved include reading, meetings, personal contacts, hospital activities, post-graduate or refresher courses, and visits to medical centres.

Personal contacts include the bedside consultations of general practitioner and consultant, as well as the less formal corridor or cloak-room discussions. Journal clubs offer opportunity for pooling the results of reading. Hospital activities include staff meetings, clinics, ward rounds, and clinico-pathological conferences. When such facilities are available to men in practice in the community in addition to those on the staff of the hospital, the level of general practice in that area should be improved.

Refresher courses, particularly during the last twenty years, have become a popular method of post-graduate training. These courses may be arranged by hospital, medical school or medical society, local or national, and may vary in length from a few days to a few weeks. They review the present state of medical knowledge in general or in a special field, and the increasing utilization of such courses suggests that they fill a recognized need. The time-honoured method of visiting medical centres is another means of keeping abreast of medical knowledge still followed by many medical men.

Obviously no doctor, whether general practitioner or specialist, can hope to keep in touch with the rapidly changing aspects of medical knowledge by his own efforts alone. It becomes the duty of medical organizations at every level—local, state, national and international—to make every possible effort to the end that their meetings will function as efficient teaching programmes. In the last analysis the responsibility comes back to the individual practitioner, for in all these methods of post-graduate training the information made available is apt to come from doctors interested in and enthusiastic about some limited field. It is still the task of the discriminating physician to evaluate this information and to fit it into the overall picture of the whole pattern of medical practice, while never losing sight of the needs of his patient as an individual.

The recognition of the importance, indeed the necessity, of post-graduate training and the inevitable pressures of specialization are probably in part responsible for one of the newer aspects of medical organization which is going on all over the English-speaking world. This is the development of organizations of general practitioners. There was a time when the general, national, State or local medical associations representing all doctors were regarded as adequate for the organizational needs of this group. With the development of stronger specialist groups and as a result of specialist certification, there has appeared a tendency to set up associations of men doing general practice, called in your countries and in England Colleges of General Practitioners, in Canada the College of General Practice, in the United States the Academy of General Practice.

The aim of these organizations is to raise the standards of general practice by requiring a certain minimum continuing post-graduate training, and to provide the benefits of strong organization which will be somewhat similar to the certification and recognition obtained by specialists. In so far as these new societies adhere to their present high standards, this new movement seems likely to produce results beneficial to the community as a whole, through the raising of the standards of general practice.

Another development in the group approach to the problems of modern medicine is the formation of the World Medical Association. This Association, which is to be distinguished from the World Health Organization, composed of representatives of government health departments, was organized after the last war and is now made up of representatives of the organized medical profession in 52 countries, large and small, rich and poor.

Critics of the World Medical Association are apt to scoff at the fact that little has been accomplished during the past ten years. But it must be remembered that large organizations which hold only one meeting a year, and which are composed of members who speak different languages, cannot be expected to produce spectacular results quickly. It is to the great credit of the World Medical Association that it arranged the first World Conference on Medical Education, which was held in London in 1954, and that it is already planning a second such conference to be held in Chicago in 1958. Much that is good will undoubtedly emerge from such a study on this scale, and the international scope of the World Medical Association indicates one of the ways in which the medical approach to world problems is being adapted to meet significant trends in contemporary development.

One of these trends—and the last which I shall take the time to touch on today—is the development of various forms of health insurance, compulsory or voluntary. Such health insurance is part of a social security concept and is concerned chiefly with the cost of medical care. It is undoubtedly affecting the methods of medical practice, and makes it necessary for us to remember that such practice is no longer a matter of uncomplicated patient-physician relationship as it was at the turn of the century.

The matter of rising costs of medical care is, of course, an important one, and with the prevalence of other insurance of all kinds, it is natural that some form of health insurance should be tried as a way of meeting these costs. The establishment of health insurance has either come about or is imminent in many countries. Australia, under the leadership of Sir Earle Page, has set the world an excellent example of government support of voluntary schemes, a plan which has much to commend it. In Canada medical care is provided by a private patient-physician relationship *plus* gradually increasing schemes of voluntary prepaid medical care; but the question of nation-wide health insurance at the Federal-Provincial level is under constant discussion, and several Provinces have already signified their willingness to participate in such a plan, and two Provinces have a compulsory hospital insurance programme. In the United States the voluntary medical plans known as Blue Shield and voluntary hospital insurance (Blue Cross) are steadily growing.

In all such arrangements, whether compulsory or voluntary, there are certain points which must be considered. Analysis of medical costs shows that it is not higher doctors' fees which account for the overall increase in costs, but the rise in the price of hospital cars, of drugs, and of all other services involved in a complete programme of medical care. In countries with a national health service, that method of distributing medical practice certainly has some advantages; but one obvious drawback is the tendency to widen the gap between general practitioner and specialist. Under a national health service in which the hospitals are manned entirely by specialists, the general practitioner is apt to occupy a secondary role—a role which the recent graduate who has spent his years of training in hospital may find it hard to accept.

Even in countries where the only form of health insurance is a voluntary one, some problems are bound to occur, for there are always complications when a third party enters into the patient-physician relationship. In any consideration of this many-sided situation careful thought must be given to the possibility that State organization and control may hamper research or retard the introduction of new ideas. In this connexion it is interesting to note that statistics on longevity offer no proof that the increase in life expectancy is greater in those countries which have socialized medicine than in those which have not. In fact, such reports as are available from such countries show that the increase has been greater in other communities.

And so we end as we began—with the conclusion that the changing aspects of medicine and the repercussions of these changes on medical education, practice and organization are of great importance to us all. Such rapid accumulation of knowledge, such strong pressures from new ideas are both dramatic and dangerous; they require the thoughtful assessment of many questions and much far-sighted consideration.

As practitioners we medical men know that we must keep up with all this new information while not losing control of the old, and that we must decide when and how best to refresh and renew our studies.

As teachers, we are anxious to plan the most efficient curricula for young men and women coming into our profession, and to give them the wisest direction for the organization of their time and energy.

As citizens of our countries and of the world we realize that the successful organization of medical services is a fundamental need of human beings, and we know that the thinking of our times inclines more and more to emphasize the efficiency of such organization at the level of State planning or even wider world-spanning developments.

But always, confronted as we are by such necessities of decision and evaluation, we are aware that there is one aspect of our profession which is unchanging: one cardinal principle which, by its very immutability, becomes our touchstone of judgement in assessing the value of the old and the merits of the new. In the mind of the physician the need of his patient, and of his patient as an individual, is and must remain paramount.

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CUTANEOUS SENSITIVITY REACTIONS.

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THE term "allergy" was originally introduced by von Pirquet in 1906 to mean an altered activity, reactivity, or energy of tissues, and was therefore a descriptive term only to express a clinical fact. Today it is used to indicate any specifically acquired alteration in the capacity of living tissues to react resulting from exposure to an exciting agent, and is manifested on reexposure to the same or an immunologically related agent. The exciting agent, termed "antigen" or "allergen", induces sensitization, and the reactions which result on reexposure are termed sensitivity reactions. The terms "allergy" and "sensitivity", therefore, may be used synonymously; it is also easier to state that a patient is sensitized than allergized.

The reactions which may occur in cutaneous sensitization are of several distinct types. These differ in their morphological appearance, immunological mechanism and pathological histology. They may be produced in either of two ways: (i) clinically, as in the urticaria of serum disease; in the eczematous eruptions of contact allergic eczema; in the hæmorrhagic necrotic reactions due to local anaphylaxis of the Arthus type following injections; and in the varied and polymorphic allergic eruptions of drug allergy; and (ii) diagnostically. (The production of these reactions by various cutaneous methods of administration of antigenic substances is used extensively in allergic practice both for the detection of specific ætiological causes of the common allergic diseases in man, and as an investigative procedure of immunological mechanisms.)

The various classifications of sensitivity reactions have in the majority of cases been based on the morphological appearance and/or the time factor (time interval following the injection required for reactions to develop, which in general are of two types, the early and the delayed reactions), and this is a sound practical method of classification. However, since the reactions are based on sensitivity—that is, an immunological mechanism demonstrable or reasonably assumed to be present—then a more definitive classification should be based on the type of immunological mechanism involved. This procedure has been adopted here, and the following classification is based on present knowledge of the immunology concerned:

Classification of Cutaneous Sensitivity Reactions.

Group I: Anaphylactic sensitivity reactions.
- A. Immediate direct reactions.
- B. Immediate indirect reactions: Prausnitz Küstner reaction, Voss reaction, autopassive transfer reaction, reversed transfer reactions.
- C. Arthus type reaction.

Group II: Intracellular sensitivity reactions.
- A. Delayed bacterial reaction.
- B. Eczematous type reaction.
- C. Urbach Königstein reaction.

Group III: Miscellaneous sensitivity reactions.
- A. Toxin-antitoxin neutralization reactions.
- B. Schwartzman reaction.
- C. Physical sensitization reactions.

GROUP I: ANAPHYLACTIC SENSITIVITY REACTIONS.

Anaphylaxis.

Richet in 1902, as a result of investigations spread over several years, introduced the term "anaphylaxis" to explain certain phenomena which occurred after repeated injections of various "toxic" substances into experimental animals. Similar unaccountable reactions had been observed and described independently by other investigators before Richet, but none had attempted to explain these in detail. Briefly Richet formulated the following two concepts from his observations of these phenomena:

> (i) A foreign substance which on first injection may be relatively harmless, may, on re-injection become severely toxic, even fatal, when given in the same or even smaller dosage; (ii) an interval of several days must elapse between the first and second injections.

He believed that during this interval between injections a protective mechanism had been lost by the experimental animal, so that the second injection was now free to act in a "toxic" manner on the tissues. The term he therefore used for this phenomenon was "anaphylaxis"—that is, removal of protection. His basic concepts are still applicable, but the mechanism involved has been proven different, for as the understanding of immunology developed it was found that this mechanism was an immunological one involving antigen-antibody reaction, the antibodies being of a particular type.

Today anaphylactic sensitivity is used to describe (*a*) experimental allergic phenomena commonly produced in particular animal species, and (*b*) similar types of allergic phenomena occurring in man, both naturally and by induction.

The basic characteristics of this type of allergy can be summarized as follows: (i) A prompt reaction develops on exposure to the specific exciting agent. (ii) The reactions involve predominantly vascular and smooth muscle tissues. (iii) Antibodies of a particular type are present and give various serological reactions, such as complement fixation and precipitation, Schultz Dale reaction, passive transfer of anaphylaxis, and Prausnitz-Küstner reaction. (iv) Other phenomena occur which vary with the individual type of antigen and species.

Immediate Direct Reactions.

As a diagnostic procedure, immediate direct reactions are localized reactions of erythema and weal formation obtained on cutaneous testing with the specific antigens to which skin sensitization of a particular type has been established. The reactions are produced by the scratch or intradermal method and basically involve the vascular tissues of the cutis. They are the commonest test procedures used in routine allergic investigation for detection of the specific causes of the atopic allergic diseases in man; they are also used, but to a lesser extent, in determining sensitivity to other antigens, as in cases of suspected serum allergy or sensitization to biological and endocrine preparations.

Clinically these reactions are also produced when sensitized shock tissues—which may be both cutaneous and/or visceral in nature—are sufficiently exposed to the specific

antigens in question. This is seen in the occurrence of various common allergic syndromes such as urticaria, angioneurotic œdema, asthma and rhinitis in the atopic and induced anaphylactic sensitivities. The following tabulation is a summary of the general characteristics of the immediate direct reaction:

Mechanism of Production: This is an acquired sensitization in susceptible individuals after exposure to the specific antigens. Why sensitization develops is unknown. An hereditary basis is of importance in the atopic allergies.

Preparatory Factors: These are complex antigenic fractions occurring in a wide range of substances. They may be classified into two groups: (i) Atopic antigens: pollens, dusts, animal danders, foods, *et cetera*. (ii) Other antigens: serum, drugs, biological and endocrine preparations, bacterial antigens of anaphylactic type.

Eliciting Factors: The eliciting factors are the same antigenic fractions—or very closely allied ones—as those which produced the original tissue sensitization. Specificity is therefore present.

Incubation Period: (i) For sensitization to develop after specific antigenic exposure, the incubation period is unknown in reference to the atopic allergies. In the induced forms, for example, with serum, drugs or biological products, it is approximately eight to ten days. This is a similar time period for production of the anaphylactic state experimentally in guinea-pigs. (ii) For development of reactions in the sensitized individual after testing or on clinical exposure, the incubation period is "immediate".

Reactive State: Duration of the reactive state is variable. Usually it is of long duration, even permanent. Shock tissue reactivity may, however, become latent with persistence of positive skin reactions.

Pathology: This is an immediate vascular exudative reaction with erythema and wealing of reversible type. Features histologically appear to be similar to those of the triple response of Lewis. More severe grades of reaction are possibly seen in the Arthus phenomenon where irreversible change with tissue necrosis is produced. There are, however, features which are distinctive in this type.

Immunology: It is a type of anaphylaxis. Specificity of reaction is present. Circulating antibodies are typically demonstrable; however, these vary in type. For example: (*a*) reagins, skin-sensitizing antibodies, and thermostable inhibiting antibodies following desensitization, in the atopic allergies; (*b*) precipitable antibodies, smooth muscle and skin-sensitizing antibodies in serum anaphylaxis; (*c*) in drug anaphylaxis circulating antibodies, which are usually (if not always) not demonstrable, though special indirect methods of testing are used by some.

Clinical Application.

The sensitization states in which immediate direct reactions occur both clinically and as a diagnostic procedure can be divided into two types. These are (i) atopic allergies, and (ii) induced anaphylactic sensitization.

Atopic Allergies.—Atopic allergies are the common spontaneously occurring clinical allergies of man, such as pollen rhinitis, dust asthma, or food urticaria, in which a reaginic mechanism is demonstrable. This reaginic mechanism may be defined as an immunological one which produces the tissue reactions of immediate direct type on the basis of reagin-antigen union, reagins being the specific type of antibodies which are present in the serum and tissues of such patients.

The question which arises when positive cutaneous reactions are obtained on testing in this group relates to their value and interpretation from a practical clinical viewpoint. It is not feasible to discuss this in detail; but it can be stated that when testing is accurately done, and reactions so obtained are interpreted in relationship to the clinical history, then they constitute the most reliable and consistent of all skin test procedures in the various allergic states.

Induced Anaphylactic Sensitization.—Immediate direct reactions are also found in a variety of induced sensitivity states in man as the clinical response, and to a less reliable extent as a cutaneous test procedure. These sensitivity states fall into three main types: (*a*) serum sensitivity, (*b*) bacterial sensitivity of anaphylactic type, (*c*) anaphylactic sensitivity to drugs, biological products and endocrine products.

Comment.—Reactions on skin testing are mainly of value in relationship to therapeutic procedures to be undertaken. This is seen, for example, in the provisional testing of patients requiring tetanus antitoxin when past injections of horse serum have been given or natural atopic serum sensitivity is suspected. In relationship to the two last-mentioned types, (*b*) and (*c*), skin tests are much less reliable.

Immediate Indirect Reactions.

Immediate indirect reactions are in essence variants of the immediate direct reaction. They have some clinical application, but in general are used as experimental investigative procedures. They involve the use of a normal subject, and several types have been described.

Prausnitz-Küstner Reaction.

The Prausnitz-Küstner reaction was first described by the authors whose name it bears in 1921. In 1924 Walzer reported its use as a routine diagnostic procedure. The reaction consists in the production of local passive sensitization in the skin of a normal subject by the intradermal injection of sensitized serum. (The sera which are commonly used are derived from patients with common atopic allergies or suspected "horse" serum sensitization.) The site so injected becomes sensitized within twenty-four to seventy-two hours, and will record an immediate direct reaction when tested by the intradermal injection of the corresponding allergen. The test therefore is a variant of the immediate direct reaction, and has a definite clinical value. It may be used when it is considered inadvisable to test directly the skin of a patient suspected to have an anaphylactic type of sensitization—for example, if extensive skin disease is present involving the usual test site; in pronounced dermatographism; with non-reactive skin types; or in infants when extensive skin testing is indicated. This method of testing requires a standardized careful technique, and the interpretation of the reactions obtained may be difficult. It is by no means as accurate and reliable as the immediate direct reaction.

Voss Reaction.

The Voss reaction is essentially a variation of the Prausnitz-Küstner reaction and demonstrates the presence of circulating antibodies in the serum of patients convalescent from serum sickness. The method used is to inject horse serum intradermally into a normal control subject. Convalescent serum is then injected intravenously. A weal and flare reaction occurs rapidly at the intradermal injection site. This test would appear to have little practical value, for in serum sickness fixed tissue antibodies are present for long periods and will give an immediate reaction on direct skin testing, circulating antibodies are also present, and a typical Prausnitz-Küstner reaction will be obtained if the test is performed on a control normal subject.

Autopassive Transfer Reaction.

The autopassive transfer reaction was first reported by Cowie (1937) in allergic individuals who developed clinical symptoms on exposure to specific allergens, but whose cutaneous tissues were non-reactive on direct testing with the same allergens. In addition, Cowie found that slight degrees of reactivity to specific allergens if present could be enhanced by this method. The test consists of the intradermal injection of the patient's own serum and later testing of such injection sites with the suspected allergens after an appropriate interval when fixation of serum antibodies to the tissue cells has occurred. Cowie stated that as vigorous a reaction might occur as in the heteropassive transfer reactions (Prausnitz-Küstner reaction). Morton (1939) disagreed completely with these findings.

Reversed Passive Transfer Reactions.

Reversed passive transfer reactions have been mainly used in an endeavour to demonstrate specific drug sensitization by cutaneous testing. They are not reliable, and the results obtained vary widely with the individual investigator. Several variants are described, but the basic principles of testing are similar in them all. Their genesis is based on the findings of Landsteiner that in drug and chemical sensitization the sensitizing factor (hapten) requires conjugation with protein to form a complete antigen and thus become capable of inducing sensitization by specific antibody formation; once sensitization has been established, then either the hapten alone or the hapten-protein conjugate can induce (sensitivity) reactions in shock tissues. Now it is a clinical fact that in a sensitized individual exposure to the specific drug is followed by the appearance of allergic symptoms; yet direct skin testing with the same drug invariably gives negative results. Very occasionally a positive direct reaction occurs, but it is the exception. Various theories (none of which can be conclusively proved) have been formulated to explain why this direct hapten testing gives negative results, one theory in particular being that a drug hapten alone is incapable of reacting with the specific antibody in the cutaneous tissues and requires conjugation with serum proteins first; that is, the complete hapten-protein conjugate is necessary for testing. Various investigators therefore combined the drug hapten in question with serum proteins both *in vivo* and *in vitro*, and used these conjugates for cutaneous testing. However, the results were once again equivocal, varying from one extreme to the other. Oriel (1931) demonstrated an autopassive transfer test in aspirin allergics using an aspirin-proteose conjugate from their urine. Dameshek and Colmes (1936) in amidopyrine sensitivity used an in-vitro combination of the drug with serum for testing the sensitized subjects. Leftwich (1944) tested sulphonamide-sensitized patients intracutaneously with serum obtained from normal donors containing the sulphonamide serum protein conjugate. This latter in-vivo type of test, or a variant of it, is the one most commonly used; but the majority of investigators using such procedures have obtained inconstant and disappointing results.

Arthus Type Reaction (Arthus Phenomenon).

The Arthus type of reaction was first described by Maurice Arthus in 1903. It consists of a localized anaphylactic reaction following intracutaneous injection into a sensitized subject with specific antigenic fractions, and is characterized by acute hæmorrhagic necrosis at the injection site. The following is a summary of the general characteristics of the Arthus reaction:

Mechanism of Production: This is an acquired sensitization produced in susceptible individuals or experimentally in animal species following injections of a wide range of antigenic substances. Why this sensitization develops is unknown.

Preparatory Factors: A diverse and wide range of injectable substances can produce this type of sensitization; usually several preparatory injections are required before it will develop.

Eliciting Factors: These must be the same antigenic substances as were used as preparatory factors. This eliciting injection is given into the tissues where the reaction is to be produced. (It is noted that focal reactivation reactions may occur here at previously injected sites. Probably these are due to systemic absorption of sufficient antigen to elicite reactions there. The reactions are comparable to those of immediate direct type.)

Incubation Periods: (i) For sensitization to develop these require a minimum of eight to ten days after the preparatory injection. This is comparable to the incubation time required for production of experimental animal anaphylaxis and induced serum allergy in man. Usually several injections are needed before sensitization develops. (ii) For the appearance of the Arthus reaction after the eliciting injection is given the time varies between four and twenty-four hours. This is for macroscopic change. Histological change is claimed to occur much earlier.

Reactive State: Once a reactive state is present it may last for months or years.

Pathology: It is an acute hæmorrhagic lesion. There is an intense inflammatory reaction of the small arterioles and blood vessels, with dilatation, engorgement, thrombosis and wall necrosis. Œdema and leucocytic infiltration into surrounding tissues occur, followed by ischæmic necrosis and ulceration. Repair by granulation tissue and fibrosis follows.

Immunology: This is a type of anaphylaxis, highly specific. Circulating antibodies are typically present. Cross-transfer of sensitivity is demonstrable.

Clinical Application.

The Arthus reaction has little clinical application. Once such a reaction develops during injection treatment, then avoidance of further injections of the specific antigenic fraction is the method of treatment. Extremely severe necrotic reactions of this type have been reported at different times in the literature following injections, mainly of serum.

It is possible that these reactions are not due to the Arthus phenomenon, but to the Schwartzman reaction mentioned later (Harkavy and Romanoff, 1939).

There is one other clinical condition in which it is necessary to bear the Arthus reaction in mind—namely, in differentiation from the tuberculin-type reaction when tuberculoprotein is employed for Mantoux testing. Under certain conditions confusion may arise in interpreting reactions as a bacterial reaction or an anaphylactic Arthus type reaction. The reason for this is that the macroscopic appearance and time interval for elicitation after skin injection may be very similar in each case. This problem has been revealed by Aronsen (1933) and by Rich and Follis (1940), and relevant details are discussed in their articles.

GROUP II: INTRACELLULAR SENSITIVITY REACTIONS.

As a group the main characteristics of the intracellular sensitivity reactions appear entirely distinct from those of the anaphylactic types of sensitization previously discussed. Many would tend to qualify this statement in that the differences are more apparent than real, for if the anaphylactic and bacterial allergies in particular are compared they have a similar fundamental basis which is a specific antigen-antibody mechanism. Differences in the clinical features are due to the type of antigen concerned, to the way in which these antigens produce sensitization, and to the type of species involved.

Immunologically in this group the specific antibodies produced appear to be localized to cellular tissues in general and are probably intracellular. Circulating serum antibodies and successful passive transfer reactions do not occur. The tissue reactions both clinically occurring and following skin testing are of a delayed inflammatory type.

Delayed Bacterial Reaction.

The concept of bacterial allergy as a distinct entity can be dated from the production of the Koch phenomenon in the latter part of the last century. This indicated that tissue reaction to reinfection was very different from that following a primary infection with the tubercle bacillus. This type of reaction has been termed the tuberculin type or delayed bacterial reaction and is due to the production of a general cellular sensitization from primary infection. It is the common type of specific sensitization that develops during the course of bacterial infection and is produced by many organisms apart from the tubercle bacillus. The following is a summary of the general characteristics of the delayed bacterial reaction:

Mechanism of Production: This is acquired sensitization in susceptible individuals following exposure to organisms or their products.

Preparatory Factors: Usually the preparatory factors are derived from active infection. They may also result from vaccination with intact killed organisms or freed bacterial products.

Eliciting Factors: Specific organisms and/or their products as in the previous paragraph are the eliciting factors.

Incubation Period: (i) Some weeks after the initial infection are required for development of this type of sensitivity. (Experimentally in guinea-pigs with tubercle bacilli it is approximately three or four weeks.) (ii) For the appearance of the delayed reaction after elicitation, the average period is twenty-four to seventy-two hours.

Reactive State: This is of long duration.

Pathology: This is a delayed inflammatory reaction with gradual development. There are inflammation, induration, and even necrosis at test sites. Injections may produce a systemic febrile response due to general tissue cell reaction.

Immunology: This is a general cellular type of sensitization. The specific antibodies are possibly intracellular. Elicitation of the delayed bacterial reaction is independent of a vascular supply, and this is a basic feature of differentiation from anaphylactic reactions (Rich and Follis, 1940). Sensitivity is transmissible through tissue cultures. Circulating antibodies are not demonstrable. Successful cross transfer of sensitivity with cellular exudates has been achieved by Landsteiner and Chase (1942). Demonstration of circulating antibodies by the difficult collodion particle method is claimed by Cannon and Marshall.

Clinical Application.

The elicitation of a delayed bacterial reaction is of the greatest value when it is used as a diagnostic aid to indicate past or present infections of certain types which may have been or are present at a clinical or subclinical level—for example, tuberculosis (Mantoux test or tuberculin type reaction), brucellosis (brucellergin test), *lymphogranuloma venereum* (Frei antigen test), dermatophytoses (trichophytin test), and others.

The significance of delayed bacterial reactions in relationship to common allergic syndromes—urticaria, asthma, angioneurotic œdema *et cetera*—in which an infective ætiology is assumed on clinical grounds to be present is a much more difficult problem to evaluate. In the various "infective" allergies, stock and/or autogenous vaccines are used, either to elicit delayed bacterial reactions if possible, so that the particular vaccine that elicited the reaction may be used therapeutically, or else to use a vaccine as non-specific treatment without initial testing. Results of testing and therapeutic injections seem to vary with one's individual enthusiasm for or against this line of treatment. I find these reactions of little value in the majority of cases, but in the occasional case they may give very satisfactory results.

Eczematous Sensitivity Reactions.

Eczematous sensitivity reactions, which occur clinically in both localized and disseminated forms, and which can often be reproduced by patch testing in such sensitized individuals, may be defined as a type of inflammatory dermatosis with the distinctive morphological appearance of eczema. In the majority of cases these result from extrinsic contact with specific sensitizing agents which produce a general epidermal sensitization, so that on reexposure the typical eczematous reaction develops. A similar cutaneous sensitization may result from intrinsic contact following injection or ingestion of the specific agent. Occasionally in drug allergies both anaphylactic and eczematous types of sensitization to the one agent can be produced.

The following is a summary of the general characteristics of the eczematous sensitivity reaction:

Mechanism of Production: This is an acquired sensitization, which may develop in any individual. The type and duration of the sensitizing exposure are important.

Preparatory Factors: These are complex or simple antigenic factors derived from a wide and varied range of substances. (Oleoresins from plants, pollens, animal products, drugs and chemicals *et cetera*).

Eliciting Factors: These are the same as the preparatory factors, or else very closely allied immunologically.

Incubation Time: (i) For sensitization to develop following initial exposure, it would appear that the incubation period may be a minimum of ten to fourteen days. (ii) Following reexposure in the sensitized individual the reaction is a delayed one, as for the tuberculin type reaction in bacterial allergy. The usual time is from twenty-four to seventy-two hours.

Reactive State: Once present, sensitization may last indefinitely.

Pathology: The primary site of reaction is thought to be epidermal, with spongiosis and vesiculation associated with secondary inflammatory changes in the upper layers of the corium. Histological changes are invariably found in both layers when the earliest lesions are examined, and it cannot be stated whether dermal inflammation is primary or secondary.

Immunology: This is a cellular sensitization comparable with that of the delayed bacterial type. The fact that the epidermal sensitization is usually general indicates the presence of a diffusible skin-sensitizing antibody. Occasionally test reactions are produced only locally—that is, on or near present or past sites of the eruption. The reasons for this are unknown. Circulating antibodies are not found. Passive cellular transfer has been demonstrated.

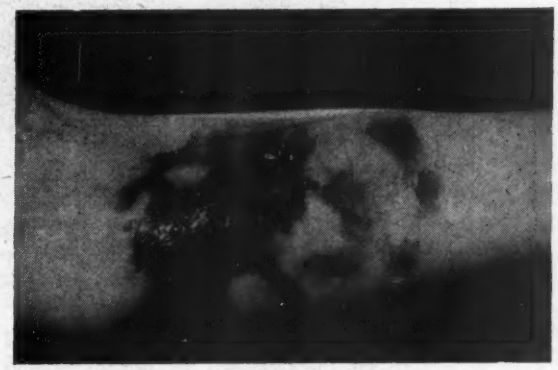

FIGURE I.

Case I. Acute hæmorrhagic necrosis which resulted from intradermal testing on the forearm with common atopic allergens. At the site of testing there developed within eight hours redness and swelling, then hæmorrhage beneath the skin with fusion of the lesions as illustrated. The extensive ulcerated area which resulted required several months to heal. (? Schwartzman phenomenon.)

Clinical Application.

Eczematous sensitivity eruptions are one of the commonest types of "dermatitis" occurring in the industrial and general domestic fields today. Clinically the contact or patch test is one method used in the identification of the offending agents by reproduction of a local eczematous reaction at the cutaneous site so tested. The concentrations of the agents used are such that primary irritant reactions are not produced on normal skin areas where the tests are performed. The test therefore permits clinical differentiation between primary irritant and sensitization lesions. The percentage of positive reactions varies widely with the degree of sensitivity present and the type of sensitizing agent.

For details regarding the technique used, the concentrations to be employed of suspected agents and the interpretation of the reactions which may result, standard texts should be consulted (Lowenthal, 1954; Hansel, 1953; Vaughan, 1948).

Urbach-Königstein Test.

This is a variation of the Prausnitz-Küstner test; however, the reaction produced is of the delayed type. It consists in obtaining the fluid of cantharides blisters from the skin of the allergic patient in question and injecting

this fluid intracutaneously into the skin of a normal recipient. The site so injected is then tested by the intradermal or patch technique with the suspected allergens after an appropriate interval. The reactions which result are delayed and similar to those of the delayed bacterial or eczematous reactions. It is believed that cellular antibodies are transferred, and the test is used in various types of allergic eczema.

Group III: Miscellaneous Sensitivity Reactions.

In the preceding general classification of cutaneous sensitivity reactions three types were included under this group. Of these the toxin-antitoxin neutralization reactions, although based on an immunological mechanism, do not involve sensitization reactions and are not discussed further. The reactions which occur in physical sensitization—which is a relatively uncommon clinical allergy—are extremely complex, and the cutaneous test procedures and interpretation of the reactions so obtained are both detailed and difficult; Vaughan (1948) discusses these in detail, and reference can be made to his text for further information.

Schwartzman Test.

This peculiar type of test was first described by Schwartzman in 1928 as an experimental procedure resulting in local and general non-specific increase in tissue sensitivity. He found that if an experimental animal was injected intradermally with certain bacterial filtrates (preparatory injection), and some twenty-four hours later was given an intravenous injection of the same filtrate (eliciting injection), then a rapidly developing hæmorrhagic lesion occurred at the intradermal injection site. Other tissues can be prepared to react in a similar fashion if the preparatory injection is given into those tissues and/or the general circulation (Sanarelli-Schwartzman reaction). The following is a summary of the general characteristics of the Schwartzman reaction:

Method of Production: It has mainly been produced experimentally in animals. Similar reactions have been considered as the probable ætiological causes of several clinical diseases in man, as discussed below. Severe skin ulceration following injections may be due to this mechanism.

Preparatory Factors: Only one injection is necessary to prepare the site for reaction. It must be bacterial in nature. Clinically an infective focus may act as the preparatory factor.

Eliciting Factor: The eliciting factor may be a wide range of substances bacterial and non-bacterial in type. These must be given by the intravenous route directly (as experimentally produced) or indirectly (as clinical counterpart).

Incubation Period: (i) The minimum incubation period required to develop the reactive state after preparatory injection would appear to be eight to twenty-four hours. (ii) After the eliciting injection the reaction develops rapidly in four to twelve hours.

Reactive State: This appears to be short in the Schwartzman-prepared animal—probably no longer than five to seven days.

Pathology: The pathological findings are described as being similar to those seen in the Arthus reaction, but of greater intensity and extent.

Immunology: This is unknown. There is certainly an acquired alteration in the capacity of the prepared tissue to react, and to react violently, but no sensitization mechanism on a demonstrable antigen-antibody basis has ever been proved. The preparatory and eliciting factors may also be entirely different substances, which is contrary to accepted criteria for sensitivity mechanisms.

Figure II.

Case II. Extensive spontaneously occurring ulcerative lesion of the forearm. Similar lesions had occurred on the trunk and limbs for the past several years. These spontaneous ulcerative lesions are typical of the condition termed *pyoderma gangrenosa*, the ætiology of which is unknown.

Clinical Application.

After the production of the Schwartzman reaction and later of the Schwartzman-Sanarelli phenomenon in experimental animals, independently several observers questioned whether or not a similar type of mechanism could be responsible for certain acute hæmorrhagic necrotic lesions of both the cutaneous and the visceral tissues in man. These could be divided from a clinical point of view into two distinct groups.

1. The first group comprises acute necrotic skin ulcerations following local cutaneous injections of a wide and diverse type. Ever since Arthus in 1903 described the Arthus reaction, the characteristics of which have been summarized, reports of necrotic local reactions following serum injections have been recorded. Many of these are probably of the anaphylactic type (Arthus reactions). However, some may not be so, and as Meleney in 1930 has suggested, it is probable that extensive necrotic reactions following serum injections during associated acute infections may be of the Schwartzman variety. Similar reactions under the same conditions following the injection of other types of material such as stock bacterial vaccines and endocrine preparations (Harkavy and Romanoff, 1939) or biologicals (Rubens, 1951) are reported, and for further information these and other references can be consulted. Figure I (Case I) is an example of extensive acute hæmorrhagic necrotic ulceration similar to those reported in the literature as being of the Schwartzman type. The ulceration followed primary intradermal testing for possible sensitization to common atopic antigens in a patient under investigation for spontaneously recurrent cutaneous ulceration of many years' duration, similar in all respects to this induced one.

2. The second group comprises certain clinically occurring diseases characterized by acute necrotic ulceration of the cutaneous tissues and/or visceral organs in which a Schwartzman type of mechanism may be a possible causal factor in certain cases. The main conditions included by most observers in this group are "idiopathic" ulcerative colitis, cortical renal necrosis, *pyoderma gangrenosa* and necrotic reactions to antigens. A full summary of the clinical conditions in which the mechanism may be operative, as well as a review of the Schwartzman reaction in general, are given by Rostenberg (1953). Figure II (Case II) illustrates an extensive spontaneous ulcerative lesion of the forearm. Similar lesions of the trunk and extremities had been intermittently present for several years in association with bowel symptomatology suggestive of ulcerative colitis. All relevant investigations gave negative results. These ulcerations are typical of *pyoderma gangrenosa*, the ætiology of which is unknown. However, it is suggested by many investigators that the Schwartzman type reaction may account for such ulcerative lesions. Both the cases referred to have already been reported by Clarke (1955) in a concise article on the condition termed *pyoderma gangrenosa*. Allergic investigation was carried out on these cases by the writer.

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A SIMPLIFIED DIRECT PREPARATION OF FIELD'S STAIN.

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THE direct preparation of Field's stain by partial oxidation of methylene blue with potassium dichromate has been shown to give very stable products having excellent staining properties (Cole and Sewell, 1953). This process of controlled oxidation in a dilute sulphuric acid solution was based on results obtained by Lillie (1943), and allowed reproducible formation of the correct proportion of azure B *in situ*, thus removing the necessity for commercial material of varying composition. After oxidation free acid was neutralized with sodium bicarbonate and the preparation was completed according to Field's original directions, with the use of a buffer mixture of disodium phosphate and potassium acid phosphate—final pH 6·6.

It appeared, however, that the stain could be further simplified for convenient extemporaneous preparation—for example, by mobile units. Simplification consisted of the replacement of the sulphuric acid by a solid acid and an alteration of the method of obtaining the final pH of the solution.

Potassium acid phosphate was first tried, but preliminary tests showed that the pH thus obtained (4·5) was still too high for the dichromate to affect the methylene blue. Spectrophotometric measurements showed no significant change in the dye solution after the twenty minutes heating period. In this connexion Bami and Nair (1955) have recently shown that in a practically neutral medium unchanged dichromate remains in solution even after six to seven hours' heating. It may also be noted that alkaline phosphate appears to have been suggested by Hitch (1941) as a replacement for sodium bicarbonate in the now superseded alkali polychroming processes.

It became evident, then, that a very low pH was required for the dichromate oxidation of methylene blue, and this was achieved by the use of potassium acid sulphate ($KHSO_4$) in amount equivalent to the free acid of the earlier process.

The second problem lay in the means to be used for achieving the optimum pH for storage, consistent with correct salt concentration. As was indicated by Field (1941), the final solution should be isotonic with human red cells. By slightly increasing the amount of potassium acid sulphate, leaving the amount of dichromate unchanged, it was possible to obtain a stain with the correct pH and suitable electrolyte concentration by the addition of a correspondingly increased amount of disodium phosphate only. In effect the excess acid, instead of being neutralized (and followed by the addition of an acid phosphate), is used for the theoretical formation of the acid phosphate in solution.

This preparation of the acid phosphate was based on the simple theoretical relationships given by the expression:

$$2KHSO_4 + 2Na_2HPO_4 = 2NaH_2PO_4 + Na_2SO_4 + K_2SO_4.$$

The amount of disodium phosphate added provides the quantity required above, *plus* an unchanged contribution to the buffer mixture.

Experimental Investigation.

The preparation of Field's solution A was then modified as follows:

Methylene blue, five grammes of 86% or an equivalent quantity of other labelled strength, potassium dichromate one gramme, and powdered potassium acid sulphate ($KHSO_4$) 20 grammes, were dissolved in 300 millilitres of distilled water in a litre flask, and the solution was boiled gently for twenty minutes, the water lost by evaporation being replaced from time to time. The solution was cooled slightly and disodium phosphate (Na_2HPO_4),[1] 30 grammes, was added, the mixture being shaken until the latter had dissolved. After having been completely cooled, the solution was diluted to 500 millilitres. Before use, one part was diluted to four parts with distilled water.

Storage in Pre-weighed Dry State.

The use of a solid acid as indicated above offers the opportunity of storing the reagents in a pre-weighed dry state ready for use by mobile laboratories. The reagents may be stored in the dry form in suitable weighed quantities in three separate tubes—(i) methylene blue and dichromate, (ii) powdered potassium acid sulphate, and (iii) disodium phosphate. It is not necessary that the methylene blue and dichromate be mixed, but the amounts must maintain precisely the proportions indicated above with appropriate amounts of acid sulphate and disodium phosphate.

[1] The equivalent quantity of hydrated salt (Na_2HPO_4, $12H_2O$) may be used.

Results and Discussion.

For convenience, particularly in operating on a smaller scale, the amount of potassium acid sulphate was increased from the 17 grammes theoretically equivalent to the sulphuric acid originally used to 20 grammes, without noticeable effect on the osmotic properties or the reaction of the final solution. (The quality of the potassium acid sulphate should conform to the formula $KHSO_4$.) The degree of oxidation of the methylene blue was controlled by the amount of dichromate and was not affected by the excess acid.

The preparation has been formulated on the basis of complete reduction of the dichromate, and when the same samples of methylene blue were used as in the previous work no significant difference was noted in the absorption measurements. Wave-lengths of maximum absorption were 648 ± 2 millimicrons. Final solutions had pH 6·4 to 6·6, with excellent staining properties, showing no variation from batch to batch when used with solution B as described by Field (1941).

Summary.

The formulation of Field's stain (solution A) has been investigated with the object of having the stain available for convenient use by mobile laboratories. Modifications of the previously described direct preparation from methylene blue consist of the replacement of the sulphuric acid by a solid acid and elimination of the sodium bicarbonate and acid potassium phosphate. This has enabled the separate solid reagents in previously weighed quantities to be stored in a form convenient for immediate preparation of the stain without the necessity of having available commercial azures. As previously, the preparations are free from undesirable lower azures and possess excellent staining properties.

Acknowledgements.

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A NOTE ON THE FRACTURED FEMUR.

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IN the course of a survey of some of the geriatric problems in the Ballarat Mental Hospital, the frequent occurrence of fractures of the upper part of the femur seemed to warrant further exploration. With the increasing institutional care of the aged, such fractures can produce considerable disability to patients and additional difficulty in their management.

Many published series of cases of fractured femur refer to the bad prognostic import of accompanying signs of senile and arteriopathic dementia. It is therefore interesting to review the actual fate of those who suffer a fractured femur during the course of senile and other psychoses.

From the records of this hospital the last 60 consecutive cases of fractured femur have been studied. Some statistics have been calculated on these 60 patients. Ten of these in the last few years have been referred to the Ballarat Base Hospital for surgical procedures, and the remaining 50 patients have been considered as a series treated only by conservative methods — traction, the application of plaster *et cetera*.

All except one of the patients were certified and had been in hospital for an average of fourteen years at the time of the fracture. Their mean age at this time was 68·24 years (standard deviation ± 10·84). Twenty-four patients were suffering from senile or arteriopathic psychoses, 14 from chronic schizophrenic illnesses, nine from epileptic manifestations, seven from various paranoid psychoses, three from manic-depressive psychoses, and one each from mental deficiency, general paresis and the sequelæ of head injury. The hospital population as a whole is fairly representative except for a preponderance of female epileptics (20%).

In the senile and arteriopathic group two-thirds of the fractures were on the left. (Bickel and Jackson, 1950, state that 65% were on the left.) In the remainder of the patients the incidence was equal for the right and left sides.

Moore (1952), quoting 179 cases, finds that 20·8% of the patients were males. Eight of the present series were males, and this on the basis of equal male and female populations is equivalent to 21·6%.

The incidence of fracture shows a slight seasonal fluctuation, as described by Stewart (1955), with a peak in the late winter or early spring.

The survival times, age at the time of fracture, and previous stay in hospital are given for the four main groups in Table I.

TABLE I.

Condition.	Age in Years at Time of Fracture.	Survival Time. (Years.)	Previous Period in Hospital. (Years.)
Senile or arteriopathic psychosis	*75·9*[1]	2·1	*1·7*
Schizophrenia	62·8	*5·8*	28·6
Paranoid phychoses	67·1	2·7	15·8
Epilepsy	59·1	2·6	25·0

[1] The figures in italics are significantly different from the others in the same column at the 5% level.

It should be noted that the survival times include in each clinical category five patients who are still alive, except for paranoid psychoses, in which there are only two survivors.

Those who died had a mean age of 72·14 years (standard deviation ± 8·718) when the fracture occurred; the survivors' mean age was only 58·21 years. It might be inferred that with the additional complication of psychosis the mortality rate from such fractures would be higher than in other series.

We have compared our mortality figures with a series of Bickel and Jackson, who give sufficient details of a series of 61 non-psychotic patients conservatively treated to make valid comparisons about the cumulative mortality for a period of twenty-six weeks. King (1950) has published a series in which the patients were followed comprehensively for eleven weeks. His results have also been included in Table II, which has been calculated on a percentage basis. Moore (1952) gives a 10% mortality rate at four weeks.

The over-all mortality figures do not show any serious worsening due to the presence of a psychosis or dementia. Some groups such as the epileptics have a rather short expectation of life after a fracture of the femur, when the mean age at the time of fracture is taken into account. The mean age at death of all patients in this hospital is 69·47 years, and 30·5% of those admitted at the age of sixty-five years and over die within the first year in hospital.

In the psychoses one can easily see causes that might predispose the subjects towards fracture. The general

infirmity and *"marche aux petits pas"* of the senile, the various manifestations of epilepsy, the indifference of the chronic schizophrenic could all be thought of as predisposing circumstances. (Two fractures occurred from falls sustained by epileptics.) Stewart's (1955) figures show, for general population age groups similar to those involved in this paper, a fractured femur rate of 169 per 100,000 per year. The comparable overall figure for this hospital would be 539 per 100,000; but the separate figures for senile and arteriopathic patients do not differ greatly from those of Stewart and show a similar distribution according to age as that shown in his Table I.

In view of this increased risk, it was necessary to determine the cause of the fracture. Twenty-two fractures were sustained as a result of physical violence between patients, usually a violent push, two from a fall in epilepsy, one from convulsive treatment, and one from a suicidal attempt by jumping. Four fractures followed largely from the presence of other infirmities—for example, a fall in apoplexy, blindness *et cetera*.

TABLE II.

Series.	Percentage Mortality.		
	Four Weeks.	Eight Weeks.	Twenty-four Weeks.
Bickel and Jackson (1950)—conservative treatment series followed for 24 weeks (60 cases)	16·6	20·0	28·3
King (1950)—surgical series followed for 11 weeks (80 cases)	7·5	12·5	—
Moore (1952)—179 cases	10·0	—	—
This series—50 cases, conservative treatment	4·0	8·0	20·0

The remaining 30 fractures (50%) appeared to be truly accidental. Of these, six occurred in bathrooms, toilets *et cetera*, three were due to steps, three were due to carpets, and three were due to falls from bed. Seven more occurred about the ward, and two on the airing court. The remaining six are recorded as accidental falls, but no further information was forthcoming.

To turn to the question of diagnosis, only five of the 24 senile and arteriopathic dementia patients received their fractures as a result of a push or other violence. Two of the seven with paranoid psychoses sustained a fracture by violence.

It would appear that the epileptic group of patients diverge most from the usual pattern of fracture, and five of the nine epileptics fractured their femora in accidents associated with violence.

Of the 20 survivors, 10 are ambulant, though four have some restriction; two more can walk with the assistance of a stick. Of these ambulant patients, two were treated operatively. Two who are confined to a chair were also treated surgically. Five of the remainder are confined to a chair, and one is confined to bed, boarded out.

Summary.

A review has been made of the outcome in the last 60 cases of fractured femur in this hospital. The figures suggest that the presence of senile or arteriopathic deterioration does not greatly affect the mortality rate, and the incidence and causes are similar to those amongst the general population. The same does not appear to hold as much amongst those psychotic patients who have grown old in the hospital.

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WEIGHT RESTRICTION IN PREGNANCY.

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MOST obstetricians who prescribe a rigid dietary for their pregnant patients have gained the impression that large babies occur less frequently; but definite proof of this is not easily available.

Since 1952 the staff of the ante-natal department of the Royal Women's Hospital, Melbourne, has made a concerted and determined effort to restrict the total weight gain of patients to 21 pounds in order to reduce the incidence of serious toxæmia. This object has been attained; but the records also give information of an appreciable reduction in the number of children born who weigh eight pounds and over.

For comparison two periods have been chosen, the calendar year 1955 and the two years from July, 1943, to June, 1945; the former is the last year for which complete figures are available, and the latter period supplies an approximately equal number of births (see Table I).

TABLE I.

Period.	Weight at Birth (Pounds).						Total.
	8	9	10	11	12	13	
July, 1943, to June, 1945[1]	1741	644	167	29	8	2	2591
January, 1955, to December, 1955[2]	1391	372	53	5	2	0	1843

[1] Total number of babies born, 7205.

[2] Total number of babies born, 7054.

With almost the same number (2% less) of births, 1955 has nearly 30% fewer children weighing eight pounds and over than the previous period. The difference is small in the eight-pound group, but is very definite in the groups of nine pounds and over nine pounds.

It has been suggested that the influx of New Australians —28% in the obstetric department—with their possibly smaller babies may have had some effect; but we do not know that their babies are smaller, or if so by how much. However, the fact that 19 of the 60 babies who weighed ten pounds and over were born to New Australians indicates that the nationality of the parents had no influence on the birth weight of the children.

On the other hand, controlling the weight of 7000 patients a year is difficult and at times impossible. Many women cannot or will not submit to dietary discipline, and these may have contributed some of the big children.

This statistical analysis seems to support the opinion that a strict dietary regimen directed to keep the weight increase during pregnancy within 21 pounds does reduce the number of over-large babies born; for this reason alone weight restriction in the pregnant woman is amply justified.

Reports of Cases.

EOSINOPHILIA WITH VISCERAL MANIFESTATIONS: A REPORT OF TWO CASES.

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THE first case in this paper is presented because of the unusual type of eosinophilia which was present on the patient's first admission to hospital, and because of its termination as chronic lymphatic leuchæmia.

The second case was reported by Fenner in 1943. I have not examined this patient myself, but was able to follow his progress by examination of his records at the Queensland Radium Institute and by a reply to a recent *questionnaire* I sent him. He also had a blood count performed on August 23, 1955. This patient was a resident of Townsville, but was first reported on while he was in the Army at Brisbane. He is now residing in Townsville again.

Clinical Records.

CASE I.—A white male patient, aged six years, was admitted to the Townsville Hospital on May 22, 1944. He was complaining of left-sided abdominal pain and was said to be breathing heavily. Examination of the patient revealed splenomegaly, a liver enlarged to the level of the umbilicus and generalized lymphadenopathy. His temperature was 100° F.; this rise persisted for two weeks, when the temperature rose to 103° F. This corresponded to a respiratory infection, moist sounds being heard at the lung bases. In four days the patient's temperature was normal and his chest was clear. On his admission to hospital he had a skin lesion diagnosed as ringworm, which was resistant to treatment for six weeks before clearing.

The child was transferred to Brisbane Radium Clinic on July 28, 1944, with a diagnosis of eosinophilic leuchæmia. By this time his spleen was not palpable and his liver was enlarged only two fingers' breadth below the right costal margin.

The results of hæmatological investigations are shown in Table I. The eosinophile cells were mature, but many contained fewer cytoplasmic granules and more vacuoles than usual.

Biopsy of a gland revealed hyperplasia of the reticulo-endothelial system, with consequent disruption of the lymphoid follicles. Large numbers of lymphocytes were still present with little fibrosis. No Dorothy-Reed giant cells were seen, but the gland was infiltrated with more than the usual number of eosinophile cells.

In the sternal bone marrow, eosinophile cells constituted 66·4% of the leucocytes, and their maturity was as follows: myelocytes, 25·6%; juvenile forms, 21·4%; stab cells, 15·7%; segmenters, 37·3%.

The following investigations all gave normal results: repeated microscopic examination of fæces, examination of a blood smear for filaria, a Kline test, a Casoni test, and X-ray examination of the skull, ribs, scapulæ and pelvis.

The diagnosis of eosinophilic leuchæmia was also reached in Brisbane, and the child received a course of X-ray therapy. He was examined in Townsville again at the end of 1944, when he was well.

The patient was again admitted to the Townsville Hospital with typical signs and symptoms of chronic lymphatic leuchæmia on July 13, 1953. He had been well till five weeks before that. He received a course of nitrogen mustard, which restored his white cell count to normal levels; but he developed thrombocytopenia and had repeated epistaxis. In spite of repeated transfusions his condition gradually deteriorated, and he died on October 7.

Examination of blood smears taken from the patient's father and 10 of his 14 siblings failed to reveal any eosinophilia.

CASE II.—This case was fully described by Fenner in 1943. The patient was then aged nineteen years. At that time he was considered to be suffering from eosinophilic leuchæmia, which appeared the most likely diagnosis, and he received X-ray therapy.

His history on his admission to hospital was that for two months previously he had dyspnœa on exertion, bouts of coughing and shortness of breath, especially at night. He gave a history of asthma of five years' duration. While in hospital he had several typical attacks of asthma. The only other signs were enlargement of the spleen to one inch below the left costal margin, and slight enlargement of the cervical, inguinal and axillary glands. Hæmatological examination then revealed a leucocyte count of about 60,000 per cubic millimetre, of which 75% were eosinophile cells. There were about 1·5% eosinophile myelocytes. An interesting feature was that the Kline test produced a positive result on three occasions, but the results of the Wassermann and Eagle flocculation tests were negative. The patient's chest film at this time showed fine diffuse infiltration throughout both lung fields.

He received X-ray therapy at the beginning of 1943, and was examined periodically after that.

After his discharge from the army in 1943 he continued having attacks of asthma till 1945. During that year he received a severe head injury in a motor-cycle accident and developed *diabetes insipidus* afterwards. However, he had no further attacks of asthma after this. For several years he required pituitrin to control his *diabetes insipidus*, but after that time he remained well without it.

In 1947 he had an hæmoptysis. This was repeated on numerous occasions, especially in 1949. X-ray examinations revealed a chronic lung abscess. There was no evidence of tuberculosis. Since then the patient has been in good health and is working full time. A recently performed blood count gave normal results, as can be seen in Table II.

Discussion.

The interesting feature of these two cases was that they were both originally diagnosed as eosinophilic leuchæmia. On reviewing them, and certainly in the light of their future course, this diagnosis is untenable.

To consider the first case: eosinophilic leuchæmia generally runs a much more chronic course than chronic myeloid leuchæmia. It is associated with considerable eosinophilia, of a similar order to that in the case under discussion, and with lymphadenopathy and hepatosplenomegaly.

Whitby and Britton (1953) state that almost always mild anæmia is present, and that eosinophile myelocytes are

TABLE I.
Hæmatological Information.

Date.	Erythrocytes per Cubic Millimetre.	Hæmoglobin Value.	Leucocytes per Cubic Millimetre.	Neutrophile Cells.	Lymphocytes.	Monocytes.	Basophile Cells.	Eosinophile Polymorpho-nuclear Leucocytes.
May 31, 1944	4,500,000	78·0%	22,000	18·0%	27·0%	2·0%	1·0%	52·0%
June 20, 1944	4,600,000	89·0%	33,000	26·5%	23·5%	11·0%	—	39·0%
July 13, 1944	—	93·0%	45,000	—	—	—	—	58·0%
July 25, 1944	—	—	79,000	6·5%	15·5%	4·0%	1·0%	73·0%

TABLE II.
Hæmatological Information.

Date.	Hæmoglobin Value. (Grammes *per Centum*.)	Leucocytes per Cubic Millimetre.	Neutrophile Cells.	Lymphocytes.	Monocytes.	Eosinophile Polymorphonuclear Leucocytes.	Eosinophile Myelocytes.
July 14, 1942	13·5	56,000	6·0%	18·2%	0·5%	73·2%	1·0
October 14, 1942 ..	14·7	63,000	10·7%	17·0%	0·9%	69·2%	2·1
December 31, 1942 ..	16·2	27,000	10·0%	9·0%	—	81·0%	Occasional
November 18, 1946 ..	14·3	17,000	52·0%	27·0%	—	21·0%	—
August 23, 1955	14·0	7,000	41·0%	51·0%	4·0%	4·0%	—

usually present though in small numbers—for example, 0·5% to 2% of the total number of leucocytes. In my case there was no real anæmia, the hæmoglobin value ranging from 78% to 93%. It can be seen that the eosinophile myelocytes were very scanty indeed, and certainly no more than could be explained by the gross increase in eosinophile cells.

The natural history of this case during the first admission to hospital was towards resolution, as the child's temperature had subsided and his liver and spleen had diminished in size in spite of a rising eosinophile cell count. This is not in keeping with leuchæmia, and even a course of X-ray therapy would not be expected to produce a cure of the condition. The child had been in good health from the end of 1944 till early in 1953.

The same argument would apply to Hodgkin's disease, although of course there was much less evidence for this diagnosis in the first place. Gland biopsy gave no indication of Hodgkin's disease, and the subsequent course confirmed it.

Familial eosinophilia can be excluded, as there was no eosinophilia in members of the patient's family. The mother was not available for testing, but the father and 10 of the patient's siblings were examined with negative results.

The usual allergic causes of eosinophilia can be dismissed, as there was no evidence of parasitic infestation.

There was no evidence of eosinophilic granuloma of bone, as multiple X-ray films of bones were normal.

We are now left with another group of eosinophilia which has various names. Zuelzer and Apt (1949) describe the condition as "disseminated visceral lesions associated with extreme eosinophilia". They describe eight cases of the syndrome, which consists of extreme eosinophilia, respiratory infections, enlarged liver and spleen and lymphadenopathy. In their series the age incidence was eighteen months to three years. In their cases the enlarged liver was the most striking feature. The liver was examined in four cases, one at autopsy and the rest at laparotomy, when it was found that the liver was studded with small white nodules. Examination of sections of these revealed eosinophile granulomata. All their cases except one commenced with respiratory infections, some with transitory X-ray changes. Allergic skin rashes occurred in some cases. Their cases showed a tendency to natural resolution, although in some hepatomegaly and eosinophilia persisted. These authors considered that their cases were due to an allergic state, although they were unable to find any cause, except for the respiratory infections. Other authors (Perlingiero and Gyorgy, 1947; Behrer, 1951; Morf, 1950) reported a similar syndrome, but in these parasitic infestations were noted, ascaris being the most common. Hojer (1949) described a similar case, but could find no evidence of parasitic infestation.

Gray and Shaw (1949) describe the clinical history of a boy, aged sixteen months, and considers that he was suffering from eosinophilic leuchæmia. He had recurrent respiratory infections and transient consolidation in both lungs, together with pronounced eosinophilia. He also had an enlarged liver and he would seem to belong to the category under discussion, although of course a follow-up history would be necessary.

Zuelzer and Apt consider that their cases were allied to Löffler's syndrome, and that while in the latter condition adults suffer transitory respiratory infections and eosinophilia, in their cases the liver was the main organ to be affected. They consider this to be so in children. The foregoing authors go on to state that they consider Löffler's syndrome and their cases as "the expression of a common pathologic process of variable localisation and severity, the nature of which is regarded as an allergic, hyperergic tissue response to undetermined antigens".

More recently other American writers have described similar cases. Silver, Henderson and Contopoulas (1952) describe a case similar to those of Zuelzer and Apt; they found hyperglobulinæmia and a high heterophile agglutination titre present.

These cases of visceral lesions with eosinophilia are related to *periarteritis nodosa*, which would appear to be a further stage of the same process, being irreversible before the use of ACTH or cortisone, and with a much worse prognosis.

I think my case fits into the category described by Zuelzer and Apt. While the age incidence is different from their cases, Bass (1941) described three cases in which the ages of the patients ranged from six to eight years. These were similar in all respects to the formers' cases and regarded by them as being so. An interesting point about one of Bass's cases was that the child had a cutaneous eruption which consisted of reddish papules. This was diagnosed as *erythema multiforme*. The persistent rash in my case could have been of this nature.

There was no definite history of a preceding respiratory infection; but it was noted that the child was "breathing heavily" before his admission to hospital. However, while in hospital he developed a respiratory infection which was diagnosed at the time as bronchopneumonia. However, the X-ray report at that time was not conclusive.

Hepatosplenomegaly appeared to be the most striking feature of this case, the liver being very large on the patient's admission to hospital. Thus in all respects this case would appear to correspond closely to the group described by Zuelzer and Apt.

The terminal illness in the first case would appear to be unrelated to the first condition except for the doubtful significance of the X-ray therapy given.

To consider the second case: at the time when this was originally reported in 1943, the most likely diagnosis would appear to have been eosinophile leuchæmia. The patient's condition corresponded fairly closely with Whitby and Britton's description of it. He had an enlarged spleen, gross leucocytosis, eosinophilia and also up to 2% of eosinophile myelocytes.

The points against that diagnosis were the respiratory symptoms, the lung X-ray findings and the positive response to the Kline test. However, it was not until 1943 that tropical eosinophilia was described as such by Weingarten, although Frimodt-Moller and Barton had described the same syndrome in 1940. In view of the patient's subsequent progress, I think he was suffering from tropical eosinophilia or a condition very similar to it.

Livingstone (1952) states that in the chronic type of tropical eosinophilia the onset is insidious, with malaise, low fever, dyspnœa on exertion and paroxysmal coughing. Bronchial asthma sometimes occurs.

The spleen is palpable in about half the cases, and occasionally the liver and lymph glands are palpable. Mottling may be seen in X-ray films of the lung fields, or there may be enlarged hilar shadows.

Gross eosinophilia and leucocytosis are present, and some patients give a position response to the Wassermann test without evidence of syphilis. Arsenic is a specific cure for the condition.

The patient under discussion fits into this category. He yielded a positive response to the Kline test, but a negative response to the Wassermann test. This would rule out syphilis as an ætiological factor, but is strong evidence in favour of tropical eosinophilia.

This patient received no arsenic, but evidently the condition underwent a natural resolution. In this case the patient appeared to have an allergic response in his lungs to some undetermined antigen. It was very interesting to note that his asthma stopped after his head injury and the onset of *diabetes insipidus*. It would be only conjecture to state that it was due to the lesion of his hypothalamus.

This second case is one of the group that has been given the name of Löffler's syndrome, but it would appear better to describe the conditions in their subgroups—for example, eosinophilia due to parasitic infections, tropical eosinophilia *et cetera*.

The two cases presented were similar in many respects, but with certain differences. In the first case the symptoms and signs were mainly abdominal, being abdominal pain and a very enlarged liver, while the respiratory symptoms were minor. In the second case the respiratory symptoms were by far the most predominant.

Zuelzer and Apt, as was previously mentioned, suggest that in children the liver is the main organ involved, while in adults the lungs are mainly affected. This would certainly appear to be so here. In neither of them was any ætiological factor found; but it is interesting that both patients should have come from Townsville. Much has been written about the role inhaled mites play in tropical eosinophilia. However, there is evidence both for and against (De Figueroa Iaboada, 1954; Ball, 1950).

Summary.

Two cases of eosinophilia are described with a review of the relevant literature. Both cases were originally diagnosed as eosinophilic leuchæmia, but in view of the subsequent progress they are both regarded as being due to an allergic hyperergic response of tissue to an unknown antigen.

In children the liver appears to bear the brunt of the response, while in adults the lungs are mainly involved, and such cases go under the name of Löffler's syndrome. The first patient, a child, died nine years later from chronic lymphatic leuchæmia, which is considered unrelated. The second patient, an adult, was diagnosed as suffering from tropical eosinophilia and has completely recovered.

Acknowledgements.

I wish to thank the Director of the Queensland Radium Institute for permission to examine the records of the second case and to publish them, and also the Medical Superintendent of the Townsville General Hospital for permission to publish the first case.

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Reviews.

Clinical Urology for General Practice. By Justin J. Cordonnier, M.D., F.A.C.S.; 1956. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical), Limited. 9½" × 6½", pp. 252, with illustrations. Price: £3 14s. 3d.

THIS work, of a little over 250 pages, is designed by the author to enable the general practitioner to manage a large number of urological problems himself, and to judge better which patients should be referred to a urologist.

Many of the chapters have an all-embracing whole-tract scope such as "The Obstructive Uropathy", "Neoplasms of the Genito-Urinary Tract" and so on. Others have a distinctly modern flavour, for example, "Renal Failure", which deals with problems of electrolyte and fluid balance and "Senescence, Fertility and Impotence in the Male", a subject often neglected in formal text-books.

This work should be valuable to the man in busy suburban or country practice, for he will have at hand a simple survey of urological problems, not overloaded with wearisome detail. The text is very readable, and the author has a good, lucid, attractive style.

Most of the very recent advances in urological methods are included, but technical surgical details are wisely avoided. Nevertheless, it is most surprising to read that cystostomy drainage is the rule after transvesical (suprapubic) prostatectomy. Although the author prefers the latter operation to the retropubic method of Millin, he, in common with many American urologists, apparently knows nothing of the epoch-making work evolved in Sydney by the late Harry Harris. All really modern transvesical enthusiasts close the bladder primarily after many operations inside this viscus, and the cystostomy drain is a thing of the past.

The other surprising unawareness of modern technical achievements is illustrated by the author's defeatist attitude towards the problem of urethral stricture in the male; he considers that cure of these obstructions is never possible, and no mention is made at all of complete excision of stricture of the anterior part of the urethra, or of the "coring out" operation for fibrotic closure of the posterior part of the canal.

Other interesting subjects dealt with are "Neurogenic Bladder Dysfunction", a really excellent chapter, and "Congenital Anomalies", a very concise and comprehensible statement of a difficult subject.

Doctor and Patient and the Law. By Louis J. Regan, M.D., LL.B.; Third Edition; 1956. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical), Limited. 9½" × 6½", pp. 716. Price: £6 17s. 6d.

THIS is an interesting, if somewhat disturbing, book, because it shows, by a wealth of recorded cases, how hazardous the way of the medical practitioner may be and how easy it is for an aggrieved person to claim, and obtain, heavy damages for what may be little more than a slight error of judgement. The author emphasizes a little known fact, and that is that the standard expected of a doctor is higher than that of the ordinary "reasonable man" whose reactions represent the measure of negligence in our civil courts. Although the cases cited are all American, they

differ little in principle from those heard in British courts. However, there are one or two examples which should prove of value, for, in the absence of a local precedent, they may become law here at a later date. One such example is sterilization. Although it is popularly believed that this operation is illegal, such is not the case. In the United States of America a person performing it may be charged with a disdemeanour or even a felony and the operation itself may be included under the heading of mayhem, mutilation or grievous bodily harm. Another procedure which is becoming of increasing importance in this country is artificial insemination. We should profit from overseas experience and warn those concerned of the pitfalls. There is the troublesome question of inheritance, for the child born is obviously illegitimate unless adopted immediately by the parents. The wife may also be considered to have committed adultery and the doctor to have been a party to it. If it is done without the husband's consent the doctor may even be held responsible for the child's support. The solution suggested in this book seems rational. It is pooling of the semen of the husband and the donor so that absolute proof *of fecundatio ab extra* will be wanting. Quite apart from these two subjects, there are valuable sections on negligence and contributory negligence; the special rights of the patient which should be respected. Some of these we tend to overlook, such as the publication of case histories and photographs without permission, and the expert witness and his responsibilities to the court (and here it may be mentioned that the evidence of a chiropractor has been accepted as that of an expert on X rays, that of an osteopath on fractures, and that of a naturopath on medical treatment). Finally, there is a miscellaneous section dealing with such matters as abortion, adoption, affiliation proceedings, contraception, insane persons and narcotics.

It is clear that a very wide field is covered, and that this work is one which could be profitably read by every medical man. It might well form the basis for a monograph to be supplied to those about to venture forth on the troubled waters of general practice and serve as a warning that putting up a plate inscribed with the words "Physician and Surgeon" is tantamount to claiming a certain skill and judgement, anything less than which may constitute the dreadful offence of negligence.

Pediatric X-Ray Diagnosis: A Textbook for Students and Practitioners of Pediatrics, Surgery and Radiology. By John Caffey, A.B., M.D.; Third Edition; 1956. Chicago: The Year Book Publishers, Incorporated. 10" × 7¼", pp. 1083, with many illustrations. Price: $28.00.

THE first edition of this book was published in 1945 and the second in 1950. The present edition has been much enlarged and contains new material in all sections, especially in the descriptions of cardiac and renal conditions. The book contains 250 new illustrations with 383 different images. Throughout the work stress is laid on the importance of a study of the normal appearances before the abnormal is considered. The author has arranged the chapters in anatomical order and this makes reference to the pathological conditions easier. In the description of the normal skull at all ages, various changes from the accepted normal are described. The interparietal bone with a 10% occurrence is liable to be mistaken for fracture or sclerosis. A handy chart displays the fœtal and post-natal ossification of the cranial bones and gives the time of appearance of ossification centres and their later fusion. Neoplasms are covered fully with excellent illustrations. The technique of cerebral pneumography is given and the results obtained are of great interest. Much advance is reported in the diagnosis of tumours of the soft tissues of the neck. The author describes many pitfalls in the diagnosis of thoracic lesions due to the superimposition of shadows of muscle and rib.

The study of the respiratory tract follows conventional lines; the various conditions are dealt with exhaustively and the illustrations are of the highest quality. Histoplasmosis (practically unknown in Australia) is carefully considered and its diagnosis from tuberculosis and sarcoidosis is discussed. Enlargement of the thymus receives attention. The section on the heart occupies much space and all modern work is recorded. Examination in various planes is necessary, and the author points out that the right shadows of the left and right auricles are superimposed in postero-anterior films. Modern methods of cardiac catheterization and angiography and the technique of examination are dealt with. The description of congenital anomalies should prove of great help and accompanying charts of the blood flow are most illuminating. In the section on the alimentary tract the author points out the danger of bowel perforation in giving enemata to children. In the bone section much new work is reported in the examination of congenital dysplasias and dislocations of the hip. The urinary tract illustrations and text are well worth close study.

Helpful charts of the times of appearance of ossification centres and of the maturation of bone and abnormal ossicles are included. Changes in bones occurring in blood diseases are described and illustrated.

This is a colossal work edited by the world's best known authority and should find a place in every library.

Hutchison's Food and the Principles of Dietetics. Revised by V. H. Mottram, M.A., and George Graham, M.A., M.D., F.R.C.P.; Eleventh Edition; 1956. London: Edward Arnold (Publishers), Limited. 8¾" × 5¾", pp. 648, with illustrations. Price: 40s.

IT is fifty-six years since the first edition of Robert Hutchison's "Food and the Principles of Dietetics" appeared, and the present edition is up to the high standards of its forerunners. A noticeable feature of this edition is the refreshing air of cynicism with which the subject of caloric and nutrient requirements is treated. For too long physicians, dietitians and nutritionists have been inclined to accept blindly the figures set down by some national or international authority as rigid and absolute. The authors have analysed the bases for the figures usually quoted in such a manner as to leave considerable doubts in the mind of the reader about the rigidity of these figures and at the same time give him sufficient data to draw his own conclusions.

The authors of this book, from Hutchison to the present authors, have approached nutrition through foodstuffs and not from nutrients, as is so frequently the practice in books of this nature. People eat food. To know what contribution any particular foodstuff makes to a balanced diet is what the doctor wants to know. Incidentally the authors have something interesting to say about "balanced diets". A feature of Part II, which deals with foodstuffs, is the description of the processing of the food from grower to marketing. This helps the reader to understand better the nutritive value of different products.

The chapters devoted to the principles of feeding in disease follow the pattern of similar editions, and there have been comparatively few additions in these chapters to the text of the tenth edition.

This is an extremely useful work-book for the physician, dietitian and nutritionist.

A Manual of Fractures and Dislocations. By Barbara Bartlett Stimson, A.B., M.D., Med.Sc.D., F.A.C.S.; Third Edition; 1956. Philadelphia: Lea and Febiger. Sydney: Angus and Robertson, Limited. 5¼" × 7¾", pp. 224, with illustrations. Price: £2 9s. 6d.

APPARENTLY this small book is often used by students and residents at the fracture service of the Presbyterian Hospital in New York City, and because of the standards set by this well-known institution, it must be treated with respect. There is, however, very little in it that one can recommend to a student, resident or general practitioner in Australia.

The manual gives a simple condensed review of most of the common fractures, and the author indicates the method she prefers in treating these conditions. Most surgeons, whose training has been based on British methods, will find it difficult to accept many of her ideas. For example, she advocates almost routine aspiration of joints which are involved in a fracture in order to avoid pain and disability. Some Colles fractures are treated by means of Kirschner wires passed through the metacarpals and the lower end of the forearm, and are later incorporated in a plaster cast. Nearly all fractures of the *os calcis* are treated by open operation and internal fixation.

In contrast to this radical approach, the author considers that fractures of the neck of the femur may be treated by fixation in plaster spicas as an alternative to the commonly accepted fixation with a Smith-Petersen pin. One finds it very hard to believe that this form of treatment is actually carried out in New York today.

Australian readers will be interested to see that many fractured femurs are treated by what is called "Australian" or Russell traction, and even the Tobruk splint, which was designed for the early treatment and transport of patients with fractured femurs in the Middle East, gets a favourable mention.

It is interesting to see the approach to the common fracture problems by the author of this book, but fortunately we have available other manuals on fractures, both large and small, which are much more suitable to the practitioner for whom this is intended.

The Treatment of Eczema in Infants and Children. By Lewis Webb Hill, M.D.; 1956. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical), Limited. 10" × 7", pp. 79, with 39 illustrations. Price: £2 4s.

"EXCEPT ye utter by the tongue words easy to be understood, how shall it be known what is spoken?" (I Corinthians, XIV:9). The author follows the principle of this quotation in his preface for four of the five chapters of this book. However, he departs from this principle in Chapter IV, although the five chapters represent informal talks rather than formal text-book descriptions. If Chapter IV is informal we must indeed ask to be saved from formality. It is a pity that the authors lays so much stress on complex immunophysiological aspects in a book devoted mainly to treatment. The pure atopists will agree with most of Dr. Hill's theorizing in Chapter IV, but the cynical non-atopists will feel justified in their cynicism after reading this chapter. The first three chapters are really excellent, however, and show clearly the wide extent of the author's experience as the former Director of the Eczema Clinic and the Allergy Clinic at the Children's Medical Centre, Boston. His treatment is sound and all would agree that admission of children to hospital with infantile eczema may or may not be a wise procedure. Each case must be decided on its merits. Local treatment combined with sedation and bandaging and with an understanding of the child's supersensitive nature will give relief in most cases. This will help more than all the skin tests in the world, and Dr. Hill realizes this, although he considers skin testing a guide to treatment in some instances. However, mostly it is not justifiable, and all physicians know those patients with multiple sensitivities (as revealed by skin tests) who do not benefit by removal of the specified allergens. Infantile eczema does not seem to be a reaction to any specific allergen. The role of such substances as Dr. Hill suggests appears to be aggravating, not causal.

"Seborrhœic dermatitis" in neonatal children and "nummular eczema" in older children are probably early or predisposing dermatoses to the later development of true infantile eczema, and it is probably a mistake to separate them as distinct states. After all, eczema is a reaction, not a disease *per se*.

Dr. Hill has illustrated his work very clearly and is to be complimented on the quality of his photographs. In spite of certain shortcomings, pædiatricians and dermatologists will appreciate most of this book or this series of articles in book form.

A Manual of Anæsthetic Techniques. By William J. Pryor, M.B., Ch.B. (N.Z.), F.F.A.R.C.S. (Eng.), D.A. (Eng.), M.F.A., R.A.C.S., with foreword by J. H. T. Challis, M.R.C.S. (Eng.), L.R.C.P. (Lond.), F.F.A.R.C.S. (Eng.), D.A. (Eng.); 1956. Bristol: John Wright and Sons, Limited. 5½" × 8½", pp. 234, with illustrations. Price: 27s. 6d.

IN its 213 pages, W. J. Pryor's book covers in a limited but fairly satisfactory way the various essentials required in modern anæsthetic practice. The need for brevity in presentation has, however, involved a good deal of obscurity in various places, and apparently has necessitated the use of strange terms like "scoline spray", "baricity" *et cetera*. In addition, trade instead of pharmacopœial names are used all too frequently, while other literary crudities such as "Techniques using Machines" appear from time to time.

Nevertheless the book contains a wealth of information, which indeed should be of great value to the house surgeons and registrars for whom it is primarily intended. Opening with concise descriptions of facilities and equipment, with numerous photographic illustrations, the discussion continues with brief chapters on mechanical and physiological considerations, anæsthetic and auxiliary agents and the preoperative assessment of the patient. The rest of the book then deals with technical details in their various simple and complex applications. Many excellent illustrations and diagrams are also included in these chapters, but the categorical method of presentation employed in the text is not entirely pleasing—it really impairs clarity and favours dogmatism. Further, to recommend endotracheal "gas-oxygen-trilene" for comparatively short procedures, in which simple measures would often suffice, is no compliment to intelligent readers. In general, however, the advice and directions given are sound and reasonably comprehensive.

The book is beautifully produced and contains few typographical errors. Of these the legend to Figure 60 on page 113 insults the well-known London firm of Siebe, Gorman and Company, Limited, while, more seriously, on pages 99 and 171, the use of "8 mm. of 1/1000 adrenalin" is recommended. This might easily be taken to mean millilitres and not minims by the inexperienced or careless. Each chapter is followed by a good list of references, and at the end of the book there is an excellent index. Obviously a great deal of study and experience has gone into this work, which with some revision for future editions should enjoy extensive popularity.

Textbook of Endocrinology. Edited by Robert H. Williams, M.D., with ten contributors; Second Edition; 1955. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical), Limited. 9½" × 6", pp. 788, with 173 illustrations. Price: £6 10s.

IN the first edition, the editor put out a survey of endocrinology which was both comprehensive and practical; this standard has been maintained in the present edition.

In the chapter on the pituitary gland, the influence of the cholinergic and adrenergic drugs is new material, while the chemistry of the pituitary hormones is advanced a step further. Antidiuretic hormone takes a more prominent part now and its influence is more fully related than previously.

Antithyroid compounds and the chemistry of thyroxin are considered in an amount of detail commensurate with their increasing clinical importance. Further emphasis is laid on the so-called "thyrotrophic exophthalmos", though no mention is made of the New Zealand work on pituitary thyrotrophic hormone levels in this disease. The survey of treatment is excellent. Indications for the use of radio-iodine, of such drugs as methimazole, or of thyroidectomy are given.

The section on the adrenals has been rewritten by Forsham and Thom from an entirely different angle. The biochemistry and physiology of the steroids in relation to general metabolism are more clearly set out and more recent concepts in diseased states are correlated.

Glucose metabolism now makes fascinating reading in pancreatic physiology.

The interrelationships of pituitary, adrenal-pancreatic function in glucose metabolism and cell membrane function are more clearly explained in the light of recent advances.

Further emphasis is laid throughout the book on the interweaving of psychic aspects with endocrinology, this being particularly stressed in the chapter "Neuro-endocrinology".

Throughout the book treatment is clear and concise; the indications and contraindications and definite regimes are laid down.

The chief value of this book is in integrating the recent advances, both physiological and biochemical, which have taken place since the previous edition appeared, their projection in terms of symptomatology and their influence on treatment.

Practical Neurology. By Leo M. Davidoff, M.D., and Emanual H. Feiring, M.D.; 1955. New York: Landsberger Medical Books, Incorporated. Distributed by the Blakiston Division of the McGraw-Hill Book Company. 8" × 5½", pp. 442.

As the preface points out, this book merely gives a clinical outline of neurology for the general practitioner, in no way attempting to give an encyclopædic reference to any part of the subject. There is no section on physiology or anatomy; these have been omitted to keep the book at a purely clinical level.

The print is large and easily legible to the presbyopic eye. A comprehensive survey of the neurologist's history taking and methods of examination is of practical value in pointing out various do's and don'ts.

In the chapter on vascular diseases of the brain, the authors go into some detail describing the various syndromes from affection of the cerebral and spinal arteries, more than one would consider necessary for the average practitioner's needs from the practical point of view. Cerebral aneurysms are comprehensively dealt with in reference to both symptomatology and surgical treatment.

The section on trauma covers general management and the commoner complications, but has nothing new in the treatment of "post-traumatic syndrome".

A brief outline of the less common infections of the central nervous system, sufficient to present the main symptomatology, accompanies more comprehensive descriptions of the commoner infections; there are few omissions.

Epilepsy is well dealt with, as to both ætiology and treatment. The latter discussion includes answers to relatives about epilepsy and its effect on the patient's life—quite useful on occasion.

The chapters on toxins and metabolic disorders affecting the central nervous system are quite comprehensive, sufficient outline being given to portray the major features.

This is quite a readable book, it is well abreast of modern thought, and covers a very wide field. The only criticism one has to offer is that when a general practitioner wants to look something up, he generally needs a deeper reference than is given by this book, which contains nothing that is not to be found in the more standard text-books.

Dynamics of Psychotherapy: The Psychology of Personality Change; Volume I: Principles. By Percival M. Symonds, Ph.D.; 1956. New York, London: Grune and Stratton. 9" x 6", pp. 222. Price: $5.50.

IN this book Dr. P. M. Symonds, Professor of Education in Columbia University, reviews the basic principles and scope of psychotherapy, the application of which, he maintains, cannot remain the exclusive privilege of medical practitioners. Clinical psychologists, social workers and the clergy seek fuller knowledge of psychotherapy for the better performance of their duties, and it is to these that the book is especially addressed. The author's viewpoints are based on his own experience and an eclectic approach. He emphasizes that what matters is the client's or patient's reaction to the therapeutic procedure, rather than the activity of the therapist who serves simply as a catalyst. Methods differ according to their goals, the depth of inquiry, and the amount of direction offered. But, according to the author, abreaction is the main dynamic factor in therapy. He mentions suggestion and persuasion in a couple of lines and denotes ten pages to counselling. There is no reference to hypnotism. It seems hardly necessary to remark that psychotherapy is contraindicated in the well adjusted who are without discomfort, problems or dissatisfactions. Professor Symonds does not regard schizophrenics as generally unsuitable for psychoanalysis, but he would have been wise to warn lay therapists about the possible dangers in these and other psychotic cases. He allows that spontaneous recovery may take place in the psychoneuroses, especially with environmental changes and as a result of new experiences. It might be taken for granted that after toilet habits have been established anxiety over soiling loses its force and intensity. He regards Eysenck's negative report as due to the selection of the least favourable criteria in assessing the results of psychotherapy.

This review should be of considerable use as an introduction to the practice of psychotherapy and preparation for an examination. Information is clearly set out and the topics discussed in the various chapters are indicated by descriptive captions. But little is included about actual techniques, which the author proposes to discuss in a volume on procedure.

An Outline of the Cytology and Pathology of the Reticular Tissue. By A. H. E. Marshall, with a chapter on the lipidoses by J. B. Cavanagh; 1956. Edinburgh and London: Oliver and Boyd. 9" x 6", pp. 284, with many illustrations. Price: 42s.

THIS book is the result of five years' work conducted mainly in the Bernhard Baron Institute of Pathology, the London Hospital, where Marshall was a Freedom Research Fellow, and where Cavanagh, now Research Fellow in Neuropathology at Guy's Hospital, London, was formerly a worker. At this institute material collected over many years by H. M. Turnbull was available for study, and it is appropriate that the preface should be written by Professor Dorothy Russell, the present head of the institute.

There are five chapters: (*a*) "Normal Anatomy, Cytology and Functions of the Reticular Tissue", (*b*) "The Classification of Hyperplastic and Neoplastic Disease of the Reticular Tissue", (*c*) "Hyperplasias of the Reticular Tissue", (*d*) "Neoplasia of the Reticular Tissue", (*e*) "Lipid Storage Diseases of the Reticular Tissue". Marshall draws freely from his own published papers, and makes many references to the work of Robb-Smith, whose material in the Lymph Node Registry at the Radcliffe Infirmary, Oxford, was available to him.

The subject of this book is a very important one to the clinician, and perhaps even more to the practising pathologist, to whom lymph node pathology remains a somewhat perplexing problem, especially as there is so much confusion in nomenclature.

The conception of the reticulo-endothelial system of Aschoff has proved of very great value. It is founded on physiological and experimental evidence, and is based on the reaction of particular living cells to vital dyes and particulate material.

Marshall, following work by Del Rio Hortega, stresses the importance of what he calls metalophile cells, which he identifies by using a silver-impregnation technique applied to dead tissue, not living tissues as in Aschoff's work.

Marshall states that while all cells which possess such dye-storing properties as would qualify them for membership in the reticulo-endothelial system are also metalophilic, the converse is not true. It appears that there is no exact parallelism between the metalophile cells and those composing the reticulo-endothelial system as described by Aschoff, and that the metalophile cells are considerably the more numerous.

In the chapter on neoplasia of reticular tissue Marshall groups neoplastic conditions under three heads: Group (1), benign unifocal neoplasms; Group (2), multifocal benign neoplasms with progressive extension; Group (3), malignant neoplasms of the reticular tissue. Not all investigators will agree with him in placing leuchæmias in Group (2).

On the question of *status thymico-lymphaticus* Marshall has an open mind.

Throughout this stimulating book the author is analytical and critical in his approach; his criticism, however, is not merely destructive; he submits many constructive suggestions, but draws a line between established truths and working hypotheses.

There is an adequate list of references at the end of each chapter, and the index is attractively arranged. There are 116 figures, all but one photomicrographs. The illustrations are of high quality, and the book is very well printed and attractively presented.

Clinical Electrocardiography: Part I. The Arrhythmias with an Atlas of Electrocardiograms. By Louis N. Katz, A.B., M.A., M.D., F.A.C.P., and Alfred Pick, M.D.; 1956. Philadelphia: Lea and Febiger. Sydney: Angus and Robertson, Limited. 10" x 7", pp. 737, with 415 illustrations. Price: £9 12s. 6d.

THIS book is based on the structure of the second edition of "Electrocardiography" of ten years ago, but it covers only one-half of the field which has now expanded too much to be encompassed by a single volume. Actually, only by concentrating on facts of clinical importance to the relative exclusion of others can two volumes cope with the material.

An adequate theoretical background is provided to facilitate the understanding and interpretation of the extraordinarily comprehensive collection of tracings selected from over 100,000 cross indexed records from over 50,000 patients. Other workers are not in accord with all the views of the authors, but their arguments, explanations and interpretations command due respect and also provide a fascinating and intriguing exposition of the subject. The concept of concealed conduction has been exploited to the full and certainly shows a way out of some awkward situations.

The authors' views on aberrant conduction, the effects of cycle length on the refractory phase, reentry, multiple block and depression of pacemakers provide much food for thought.

In the explanation of flutter and fibrillation they do not see eye to eye with Prinzmetal, but favour multiple reentry However, they admit that several factors take part and do not believe the complete answer has yet been found. The first six chapters include general considerations and the theoretical background of arrhythmias and include one devoted to general principles in therapy of arrhythmias. The second part of the book contains a systematic description of arrhythmias, while the two appendices, which bring it to a close, describe the system for interpreting an arrhythmia and a classified coding system of normal and abnormal rhythms. Although the text explains the subject very fully, the greatest value is perhaps in the illustrations of the various types of arrhythmia, to each of which is attached a detailed interpretation with alternative explanations when these are possible. This wide selection of tracings not only covers the field, but serves to support the arguments advanced by Katz and his colleagues concerning the underlying mechanisms.

The fine illustrations and the stimulating discussion and presentation render this book most instructive to all students of the subject and an invaluable addition to the cardiologist's library.

The Facts of Mental Health and Illness. By K. R. Stallworthy, M.B., Ch.B., D.P.M.; 1956. Christchurch: N. M. Peryer, Limited. 8½" x 5½", pp. 215. Price: 18s. 6d.

DR. STALLWORTHY states in the preface that the substance of this book is derived from a series of twenty lectures given to lay audiences under the auspices of the Regional Council of Adult Education in Auckland, New Zealand, and that the suggestion that the book be written came in the first place from those who heard the lectures. It is, as the author states, not a book for the expert who knows everything written in it. It is fortunate that the book was written, for it contains valuable information on the subjects dealt with in its twelve chapters. Anybody reading the book could certainly profit thereby; but whether he did so would, of course, depend upon himself. As for alcoholics and persons mentally affected, it is difficult to induce them to undergo any mental or spiritual analysis of themselves.

The final chapter, which is concerned with mental hospitals and treatments in them, makes it clear that these institutions are not nearly so bad as they are often thought to be. Indeed, on page 202 the author points out that a fairly common problem is presented by the patient who does not want to leave hospital, although he is well enough to do so, and that there are, from many points of view, considerable advantages in living free of charge in the equivalent of a medium-class hotel, with no responsibilities and little work to do.

This book is certainly worth reading. It may even be of interest to medical practitioners, who could recommend it to suitable patients under their care.

Nursing Care of the Newly Born Infant. By W. S. Craig, B.Sc. (Glas.), M.D., F.R.C.P. (Edin.), M.R.C.P. (Lond.), F.R.S.E., in collaboration with M. F. G. Buchanan, M.B., Ch.B., M.R.C.P. (Edin.), D.C.H. (Lond.), R. J. Pugh, M.B., Ch.B., M.R.C.P., D.C.H. (Lond.), and Miss M. Pattullo, R.G.N., S.C.M., with a chapter on mothercraft contributed by Miss M. J. W. Taylor, R.G.N., S.C.M., M.T.D.; 1955. Edinburgh and London: E. and S. Livingstone, Limited. 8½" x 6", pp. 480, with 225 illustrations. Price: 35s.

EMANATING as it does from the Department of Pædiatrics and Child Health of the University of Leeds and the associated Leeds Maternity Hospital, this text-book widens the field of influence of Professor Craig and his staff of expert lecturers and clinicians.

Australia is a long distance from Leeds, and our climates and customs vary considerably. Most of the information in this book from Leeds is quite acceptable in Australia and a little of it is inapplicable there. It would be churlish to criticize before we commend the book to general practitioners, obstetrical nurses, and pædiatricians in Australia as in the United Kingdom. Apart from the professional facts, Professor Craig and those who have assisted him with the book have interpolated many pieces of wise advice. The great importance of intelligent and accurate observation is stressed. The avoidance of comments by nurses to parents about diagnosis, mental abnormality, advisable treatment, and other matters properly the role of the physician is to be observed, though nurses are exhorted to be friendly and to give tactful answers which are not likely to impede the freedom of action and opinion of the physician in charge. The obtaining of professional post-natal advice on infant feeding is regarded as important.

Some criticism is indicated. Though the illustrations are provided on a generous scale, some of the coloured ones are garish and unrealistic; they must have been disappointing to all concerned. Occasional typographical errors have escaped notice, such as the reference to page 334 at the end of page 156 and the misspelling of "congenital" on page 258. Test-weighing and "on demand" feeding are not adequately described, the use of boat-shaped bottles is regarded as antiquated, and catheter feeding into the œsophagus rather than the stomach is deprecated in Australia. From the statement on page 257 the inference is that anophthalmia is not immediately obvious at birth; that is not what the writer meant. No reference can be found to retrolental fibroplasia; nurses caring for premature babies should be alerted to the care needed in the use of oxygen in the prophylaxis of this disastrous condition. Another omission is reference to that variety of œsophago-tracheal fistula which should be detected by the distension of the stomach with air before the first feeding is given. Doubtless there are other omissions, but these two seem to belong to the nursing care of the newly born infant.

In the arrangement of the book we think that Chapter III is rather difficult for nurses and might with advantage be simplified and placed closer to Chapter XI. Another stumbling block is Chapter II, which might suitably be relegated to the end as an appendix. The special chapter on mothercraft is contributed by Miss M. Taylor, the matron of the Jessop Hospital for Women, Sheffield. It is very good so far as it goes, but it stops short of advocating or describing the training of young women as mothercraft nurses and their availability for employment in the home to assist the inexperienced mother to care for her young baby and in the carrying out of advice obtained from her physician, midwife, or at the infant welfare centre.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Changing Concepts of Psychoanalytic Medicine", Proceedings of the Decennial Celebration of the Columbia University Psychoanalytic Clinic, March 19 and 20, 1955, edited by Sandor Rado, M.D., D.Pol.Sc., and George E. Daniels, M.D.; 1956. New York, London: Grune and Stratton, Incorporated. 8¾" x 5½", pp. 256, with illustrations. Price: $6.75.

Comprises 15 chapters which are grouped under six headings.

"The Great Physiodynamic Therapies in Psychiatry: An Historical Reappraisal", edited by Arthur M. Sackler, M.D., Mortimer D. Sackler, M.D., Raymond R. Sackler, M.D., and Félix Martí-Ibáñez, M.D., with personal contributions by Ugo Cerletti, M.D., Roy G. Hoskins, M.D., Ph.D., Laszlo Joseph Meduna, M.D., Egas Moniz, M.D., and Manfred J. Sakel, M.D., Sc.D.; 1956. New York: Paul B. Hoeber, Incorporated. 10¼" x 7", pp. 206, with illustrations. Price: $5.75.

The articles are reprinted from the *Journal of Clinical and Experimental Psychopathology* and the *Quarterly Review of Psychiatry and Neurology*.

"Diagnosis and Treatment of Peripheral Vascular Disorders", by David I. Abramson, M.D., F.A.C.P.; 1956. New York: Paul B. Hoeber, Incorporated. 10¼" x 7", pp. 555, with illustrations. Price: $13.50.

The book has been written to make knowledge of circulatory disturbances "conveniently accessible" to the busy practitioner.

"The Primary Psychiatric Syndromes: Criteria for Clinical Diagnosis", by Dwight L. Moody, L.R.C.P., L.R.C.S. (Edinburgh), L.R.F.P.S. (Glasgow), D.P.M., with a foreword by William Blyth, M.D., F.R.F.P.S.G., D.P.M., B.L., LL.B.; 1956. Bristol: John Wright and Sons, Limited. 8¾" x 5½", pp. 372. Price: 37s. 6d.

The book is described as giving "a complete and concise description of the patterns of mental illness, establishing diagnosis in the psychoneuroses and the primary psychoses, with outlines of the more important clinical conditions and significant trait-syndromes considered in differential diagnoses".

"Neuropharmacology: Transactions of the Second Conference, May 25, 26 and 27, 1955, Princeton, N.J.", edited by Harold A. Abramson, M.D.; 1956. The Josiah Macy, Jr. Foundation Publications. 9¼" x 6¼", pp. 328, with illustrations. Price: $4.25.

The subjects discussed included: "Lysergic Acid Diethylamide and Related Compounds", "Effect of Drugs on the Behaviour of Animals and on Psychoses of Man", "Schizophrenia", "Experimentally Induced Psychoses in Man", "Tolerance to LSD-25 and a Theory of Psychoses".

"Polysaccharides in Biology: Transactions of the First Conference, April 27, 28 and 29, 1955, Princeton, N.J.", edited by Georg F. Springer, M.D.; 1956. New York: The Josiah Macy, Jr. Foundation Publications. 9¼" x 6¼", pp. 271, with illustrations. Price: $5.00.

Four subjects were discussed in detail—nomenclature, classification, bacterial polysaccharides and blood group substances.

The Medical Journal of Australia

SATURDAY, OCTOBER 20, 1956.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of the article. The abbreviations used for the titles of journals are those adopted by the Quarterly Cumulative Index Medicus. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

MEDICAL STATISTICS.

A CYNICAL REMARK that anything can be proved by statistics is frequently uttered, especially by those whose opinions have been combated in this way. If the numeration is inaccurately made or if basic factors have been ignored, then false conclusions are inevitable. An amusing skit on the dangers attending faulty application of statistical methods was published recently in an American scientific journal. The number of letters in the name of each month was taken—January, 7; February, 8; March, 5; April, 5; May, 3; June, 4; July, 4; August, 6; September, 9; October, 7; November, 8; December, 8. The resources of mathematical analysis were brought into operation, and after some clever juggling with figures the conclusion was announced that there is a definite correlation between the number of letters in the names of the months and the precipitation of rain. The detection of the fallacy was left to the common sense of the reader. It is indeed strange that a compilation of statistical facts scientifically conducted and untinctured by any political bias (and here one can pay a tribute of praise to the high standard of the "Official Year Book of the Commonwealth of Australia") can be used as ammunition in party debate. A little thought will show how each suggested legislative measure is firmly based on statistical evidence. Before a new tax can be imposed or an old tax altered, an elaborate and detailed statistical investigation is necessary. A budget must be able to withstand criticism from those conversant with the Year Book's pages if it is to have any chance of acceptance. The cost of living, basic wage, pension rates, numbers of young men fit for military service and many other items in governmental operation are examples of applied statistics. It can be said with assurance that if in any country a variable capable of numerical assessment is not presented in tabular form for study, such country is lacking in civilization.

Invariable sequence or concomitance is not accepted by the ordinary human intellect as proof of causation; there must be identification with recognized steps of logical reasoning. If Charles Darwin had merely announced that old maids produce increased fertility of neighbouring soil, his statement would have aroused sceptical hilarity; but when he explained that old maids keep cats, that cats prey upon field mice, that field mice harry the crude hives of bumble bees, that bumble bees are largely responsible for the pollination of clover blossom and that clover enriches the soil, we now know by nitrogen fixation, the causal chain was revealed and the argument accepted as rational. Thorold Rogers was puzzled by his discovery that in the Middle Ages the price of salt varied directly as the summer rainfall; when he realized that at that time salt was produced by the evaporation of sea water through solar heat, all became clear.

The use of statistical methods in medical science is growing rapidly. Hospitals are increasing in size and distribution, patients are becoming more numerous, records are being better kept and diagnostic techniques are constantly improving. The number of medical experiments which can be ethically performed on the human being is small, and so in all those many fields of clinical and pathological inquiry where the results of animal experimentation cannot be applied to the human patient or must be checked by human experience, there remains the statistical method as practically the only possible one available. Doctors have been accused of lack of training in the required mathematical procedures; that charge is becoming less and less deserved. Anyhow, a doctor with poor mathematical equipment will not make such grievous errors as a mathematician with little or no knowledge of medicine. Karl Pearson was greatly impressed by the fact that skeletons dug up from a mediæval graveyard showed a preponderance of male pelvic bones. He came to some remarkable conclusions regarding the distribution of the sexes in earlier times, until he was told that female bones, being more slender than male, disintegrate more rapidly and completely. A distinguished Australian statistician made what he thought was a physiological discovery of some importance; he found that a large number of twins were born less than nine months after the marriage of their parents and so concluded that pre-marital intercourse was conducive to twin production. A little elementary knowledge of obstetrics would have put him right. Care must always be exercised in selecting proper units, and often a surprising discovery is made by some alteration in the coordinates. Thus if growth of children is plotted against their age the resulting graph is smooth, but if growth is plotted against season of the year the graph is stepped and shows that in winter, at least in extra-tropical climates, growth of children undergoes a decline. The wearied obstetrician and general practitioner, conscious of broken sleep, believe that most parturitions occur in the small hours of night. Guthmann in 1936 analysed

121,794 cases, and found that if the twenty-four-hour day is divided into a day period of 6 a.m. to 6 p.m. and a night period of 6 p.m. to 6 a.m., the distribution of parturitions is almost fifty-fifty. This result has been confirmed by others. But in this year Peter King, of Warren, Pennsylvania, showed that if instead of an arbitrary subdivision of the twenty-four-hour period the parturitions were tabulated as births during each separate hour, then a peak at 5 a.m. was displayed.

There is one danger attending statistical investigation in medicine. Valuable as it can be, it cannot be regarded as equal in mental discipline to experimental research in pathology and physiology. A young man who aspires to a doctorate or is simply prompted by a love of such work, and who examines hospital records with the best mathematical technique, should be warned that the thesis he prepares must be lower in value than a properly conducted experimental research carried out under the direction of an experienced head of a laboratory. When such is the only method of attacking a problem, by all means let it be employed with every logical safeguard; but its limitations should be remembered. Helmholtz remarked that the moral lesson conveyed by a refractory piece of glass or metal can be of unique service in the training of a scientist. H. G. Wells sneered at the trouble taken by him and with him in making a bad thermometer; had he only persevered until he produced even a moderately efficient thermometer, he might have avoided later those impetuous mistakes which damaged his reputation.

Current Comment.

READING DISABILITY IN CHILDHOOD.

Modern neurophysiological concepts have it that the areas of the brain concerned with the written and the spoken word are confined to that side of the brain dominant in the skills of the subservient limbs. Thus in the right handed, the left half of the brain not only is burdened with the dominant right arm and leg, but also plays the leading part in vision, auditory appreciation and the many facets of words perceived and uttered. Several terms have been coined for the not uncommon syndrome of difficulty experienced by children in the mastery of language. Of these terms the best is probably developmental dysphasia. The syndrome is not associated with cerebral damage, and it is usually manifested by the apparent difficulties in the learning of the skills of reading and writing. The syndrome is important, for it usually proceeds undiagnosed and results in the condemning of an intelligent and unhappy child into the ranks of the mentally backward. The ætiology of developmental dysphasia is obscure. However, it appears not unlikely that the fault lies in the variation from dominant laterality in the brain. Developmental dysphasia may arise in the child normally dominantly left handed and forced into the opposite tendency. Many more cases of the syndrome do not have this obvious cause for the development difficulty, and it has been suggested that these children are suffering under the disadvantage of crossed laterality of neurophysiological function. R. A. H. Pearce[1] found some surprising results from his exhaustive psychological tests applied to schoolchildren. It was found that 47% of the children had some degree of crossed laterality, and, of these children, 85% were in the group who experienced difficulties in school work. There are many ways in which the crossed laterality may be expressed. Thus the child with crossed laterality of eye and hand will twist the paper or head in writing; the crossed laterality of foot and hand leads to clumsy kicking, and so on. The most widely known symptom arising from attempts to change the dominance is that of deranged speech. The child may become careless and lazy or develop enuresis or encopresis. In his series, Pearce found 49·3% of completely right dominant and 4% of completely left dominant children. A potential handicap due to a considerable degree of crossed dominance occurred in 28% of the children. Pearce went on to describe ingenious ways in which the reading disability caused by crossed dominance could be overcome. An annotation in the *Lancet*[2] refers to the work of M. G. Downes and R. S. Schuman,[3] who describe vividly the distress and emotional conflict experienced by the child with developmental dysphasia. The child hates to be made to read, has an alarming sense of being different and may either develop antisocial tendencies or find an outlet in other activities or hobbies. Later there develops the personality of the perfectionist and the dread of making mistakes.

J. Rabkin[4] suggests that the condition is becoming more apparent because of the new educational methods of teaching children to read by visual word recognition rather than by the older phonetical methods which are perhaps more logical. Rabkin quotes the lucid description by G. E. Park[4] of two unusually intelligent infants who were quite unable to overcome the fundamental problems of learning to read. Rabkin states that this kind of child may, at first, give the appearance of being able to read, simply because of the use which he makes of a very good memory. Letters, syllables and whole words are often reversed in writing, though mirror reading is rarely seen. The child struggles with his text-books even when he has learned to read, so that the rest of his learning is limited. Many are ambidexterous in a clumsy fashion, and Rabkin suggests that about half of these children with mixed dominance have some form of speech defect. The child may be enthusiastic in such activities as drawing, mechanics and athletics. Rabkin states that the defect is four times more common in boys than in girls. Not all workers agree on the sex difference, if any. Teaching methods for these children should be visual, auditory and kinæsthetic, and attention should be paid to the bolstering of the children's confidence.

T. T. S. Ingram and J. F. Reid[5] have studied 78 children referred by reason of educational maladjustment, but with no intellectual, personality, neurological, visual or auditory defects. Of the children, 65 were boys. The type of educational maladjustment varied widely. The most common difficulty was in withdrawal behaviour. There was no increased tendency for illegitimacy, though there was a significantly higher proportion of children from the standard higher social classes. Seventeen came from broken homes, and there were many more histories of a disturbed social history or of psychological diseases in parents or siblings. There was considerable divergence from the normal right handedness in parents and siblings. Of the patients, nine were left handed, 13 were right handed and the rest had little or no preference. Speech defects were not usually severe, but were found to some degree in the majority of the patients. More than half of the children had been delayed in developing speech. Many children experienced difficulty in remembering the names of things or had other types of aphasia. The children with receptive aphasia typically asked for each command to be repeated. Soon after starting school most of the children developed a behaviour or personality disorder. Some reacted aggressively against the school or their classmates and others attempted to withdraw from the stressful situation. In treatment, Ingram and Reid were able to diminish anxiety and restore lost confidence by explaining

[1] *Arch. Dis. Childhood*, August, 1953.

[1] *Lancet*, March 26, 1955.
[2] *New England J. Med.*, 252: 217, 1955.
[3] *South African M. J.*, July 21, 1956.
[4] *Arch. Pediat.*, 68: 533, 1951.
[5] *Arch. Dis. Childhood*, June, 1956.

the nature of the disability to the patients. A sympathetic attitude by teachers and parents was encouraged, and the visual and proprioceptive appreciations of word and letter shapes were used in teaching. Although there seems to be an increasing incidence of twins in patients and affected families, the genetical influence is obscure. The environmental factors merely exacerbate the aphasic symptoms. Ingram and Reid conclude that the severity of the learning difficulty appears to be more closely related to failure to perceive the meaning or significance of the written or spoken word; it is in this direction that study should be directed into the underlying difficulties of developmental dysphasia.

TYROTHRICIN: A LOCAL ANTIBIOTIC.

ANTIBIOTICS such as penicillin have largely fallen into disrepute as local therapeutic agents, because of the rapid development of organisms resistant to them. Once organisms have acquired resistance, the antibiotic is of no further use even if used systemically. Another drawback of many locally applied antibiotics such as penicillin is the fairly frequent occurrence of allergic reactions. There are, however, some antibiotics suitable only for local application. Tyrothricin, obtained from cultures of *Bacillus brevis*, is one of these. It has a rapid bacteriostatic action, and organisms develop resistance to it only rarely. Tyrothricin acts mainly on Gram-positive bacteria, but appears to have some effect also on Gram-negative organisms. Locally applied, tyrothricin causes hardly any side reactions. Its main disadvantages, as set out by Goodman and Gilman in the second edition of their "Pharmacological Basis of Therapeutics", are low order of potency against Gram-negative bacteria, hæmolytic activity if in direct contact with the blood-stream, occasional anosmia when used in nasal infections, and the danger of chemical meningitis if used in sinus infections.

H. Neber and R. Steinbach,[1] using the drug on out-patients, report on a trial of tyrothricin in the form of lozenges, cream and powder. Of 161 patients, 105 were suffering from infections of the mouth or oro-pharynx such as common colds, Vincent's angina and acute pharyngitis. The patients were told to suck one lozenge every two to three hours and to place a lozenge inside the cheek on going to bed. In most cases, symptoms abated after two days, but some required a third day's therapy. Several patients had a recurrence of their complaint within a year, and in these cases tyrothricin was just as effective as it had been in the first instance. Seven patients with chronic tonsillitis were treated with throat paint as well as tyrothricin lozenges. Three of these recovered entirely after a fortnight's treatment, but in the other four no improvement was noted. Seventeen patients with pyodermia were treated with daily dressings of tyrothricin ointment. Speed of healing varied with the size of the lesion, but some improvement was noted in most cases after three to four days. Similarly, infection was cleared up in all of 39 ambulant patients with *ulcus cruris*. The ulcers had all produced a mixed bacterial growth on culture. In each case the infection cleared rapidly, and the surrounding skin showed no sign of irritation by tyrothricin, even when varicose eczema was present. Once infection was overcome, other methods of ulcer treatment were used to encourage granulation. In this way, ulcers up to three inches in diameter healed in four to eight weeks. Finally, tyrothricin powder is also recommended for the treatment of infected cuts and abrasions.

Another trial of tyrothricin on out-patients was made by H. Schneider.[2] He applied the drug as an inhalant, using a solution of 1·0 milligramme of tyrothricin per millilitre with added cetylmethylammoniumbromide. The usual adult dose was 1·0 to 2·5 milligrammes of tyrothricin twice daily, but up to 3·5 milligrammes twice daily were given to some patients. Schneider used tyrothricin on over 1300 patients suffering from sinusitis, pharyngitis, laryngitis, tracheitis, bronchitis, bronchiectasis, and combinations of any of these infections. He observed no serious side effects, but a few of his patients had a severe coughing attack during inhalation. This could be prevented by giving the antibiotic in weaker solution. Nearly 2% of his patients had mild allergic reactions, all but one (a patient with urticaria) at or close to the area of application. Very few patients developed subsequent tyrothricin-resistant strains of organisms. Of 515 patients with acute bacterial upper respiratory tract infection, 58% were cured and 24% showed considerable improvement, benefit in each case commencing after only two days of treatment. Of 814 patients with chronic respiratory tract infection, 23% were cured, and the condition of 43% improved greatly. On the other hand, patients suffering from chronic laryngitis (23 cases) and bronchiectasis (27 cases) showed little improvement.

One may conclude that tyrothricin is a promising antibiotic which merits further investigation, especially under local conditions.

[1] *Wien. med. Wchnschr.*, 1956, 11, 271.
[2] *Wien. med. Wchnschr.*, 1956, 14, 322.

MENISCUS INJURIES OF THE TEMPORO-MANDIBULAR JOINT.

SEVERE disease of the temporo-mandibular joint is rare, and abnormalities of the joint have excited comparatively little attention in orthopædic practice. The joint lies in the frontier region between dental and orthopædic surgery, and responsibility for the treatment of diseases of the temporo-mandibular joint is not always willingly accepted by the practitioners of either of these branches of medicine. Comparatively minor abnormalities of the temporo-mandibular joint are not uncommon, and though they form no danger to life they can be painfully annoying, and interfere both with speech and with the process of eating. The most frequently abnormal structure in the joint is the meniscus itself. Most authors suggest that abnormalities result from injury to the meniscus, but it seems not unlikely that, as in the case of the knee, the meniscus is previously abnormal, so that minor trauma causes injury and eventual signs and symptoms. The most frequent complaint is of an audible cracking during some stage of opening or closing of the mouth. The sound is often audible to the bystander. The affected jaw is frequently tender, and patients may devise their own jaw deviations or unlocking procedures in order to open the mouth fully in biting or yawning. The teeth in biting may be incorrectly opposed. One feature, lacking in papers on the subject, is that the condition may vary considerably from day to day. A jaw which may be almost locked at one period, especially in the morning, may move with scarcely a snap a few hours later. In minor conditions of this type it is sufficient to correct any dental anomaly and to warn the patient to avoid as much as possible cracking the jaw. The main complication of the condition is osteoarthritis of the temporo-mandibular joint of such severity that the articulating condyle must be removed to free the mandible. Pain in the region of the joint, or referred as a headache, may be quite distressing and last, as R. Berlin *et alii*[1] report, for many years before the correct cause is suspected. J. Foged[2] at operation on these joints found that the meniscus was either abnormally lax or was fixed to the capitulum by fibrous adhesions. The lower jaw cavity might be partially obliterated, the articular cartilage degenerated and the capitulum sometimes deformed. Foged obtained good results in a series of these cases, usually by removal of the meniscus and the division of adhesions under local anæsthesia.

C. L. Kiehn[3] suggests that, in acute cases, treatment should be by sedation, local heat, and putting the joint at rest. If crepitus and pain persist and there is no causative

[1] *Acta med. scandinav.*, 154:167, 1956.
[2] *Lancet*, December 31, 1949.
[3] *Am. J. Surg.*, March, 1952.

malocclusion, a meniscectomy should be performed. Like other workers, Kiehn has found X rays to be unsatisfactory in making the diagnosis. Particular care is needed during operation to avoid injury to the seventh cranial nerve.

C. M. Silver, S. D. Simon and A. A. Savastano[1] found that radiological study of the temporo-mandibular joints in affected patients revealed that there was a definite restriction of forward excursion of the mandibular condyle on the involved side of the jaw. Most of the patients are women. As an adjuvant to conservative therapy Silver *et alii* have found the intraarticular injection of hydrocortone solution to give beneficial results in a number of cases. Malocclusion should be corrected before surgical interference is contemplated. The Thoma incision used by Silver *et alii* runs vertically close to the margin of the ear and then extends obliquely upwards and forwards for a short distance. The incision must stop one-quarter of an inch above the lower lobe of the ear in order to avoid damage to the seventh cranial nerve. When the joint has been fully exposed, the anæsthetist pulls forward on the mandible, so that clear access is gained to the meniscus behind the mandibular condyle. The patient is allowed to eat soft foods the next day, and to minimize scarring the sutures are removed on the second or third day after operation. The operation converts the temporo-mandibular joint from a compound to a simple joint with articular surfaces which do not fit one another. The joint relatively soon accommodates itself to the new stresses imposed upon it. Silver *et alii* operated upon a series of 44 patients who required removal of the temporo-mandibular meniscus; in each case intratracheal anæsthesia was used with the tube inserted through the nose.

MELANOMA IN PREGNANCY.

The diagnosis of melanoma is usually taken as a death sentence. Yet, the prognosis in this form of cancer is much better than in carcinoma of the stomach, for example. Melanoma is the subject of much irrational belief. Even amongst quite enlightened medical practitioners it is still believed that a dark, growing nævus should be left alone because excision causes dissemination. They will quote the case of a young person who had a "simple" mole removed for cosmetic reasons and who died within a year or two from metastases. There had, of course, been no histological examination of the primary tumour because it was obviously "simple". In many of these cases the patient only admits any change in the appearance of the mole on close questioning. Enlargement, deepening of the colour, ulceration or bleeding and the appearance of inflammation are important indications of malignancy. The development of a colourless nodule in a flat junction nævus, usually in the older person, is another indication of malignancy. However, one should not wait for change in the appearance of a premalignant mole. While there is any "junctional" component, malignancy may supervene. Waiting to see what is going to happen in such a lesion is negligence on the part of the doctor.

We are all aware of the hormonal background in the development of melanoma. Rarely is malignancy found before puberty, and most of us have the impression that pregnancy is an adverse factor. George T. Pack and Isabel M. Scharnagel[2] have recently published the results of their experience in 32 cases of melanoma associated in some way with pregnancy. They divided their cases into three groups. There were 10 patients in whom pregnancy and melanoma were coincidental. Five who were still alive had been only recently treated; the remainder had all died within two and a half years. In 11 patients malignancy supervened upon a benign lesion during pregnancy. Of these, three patients showed no evidence of cancer for periods of eighteen months, three years and thirteen years after treatment. Four had been only recently treated, one was lost from the follow-up, and of the remaining three, one had metastases and two were dead. In the third group there were 11 patients who became pregnant after treatment for melanoma. One was well after three years, and another after eight years. Two had been only recently treated and the others had died within fifteen months.

Of these 32 patients in whom melanoma and pregnancy were associated in some way, 14 were dead within three years; 14 had been treated only within the previous three years and could not be evaluated; two had survived long periods after radical treatment; one was alive, though with metastases; and one patient was lost to the survey. These results are worse than the expected results of treatment of patients in whom there had been no association of pregnancy with the melanoma. Other figures from the same source[2] indicated that in general 40% of patients in whom there was no lymph node involvement survived free of cancer for five years or more after simple excision. Of those with lymph node involvement, 14% survived free of symptoms or metastases for five years or longer.

Arising out of their survey, Pack and Scharnagel conclude that pregnancy does have an adverse effect upon melanoma and that because progression of the melanoma once initiated is irreversible, termination of pregnancy is useless.

The recommendations of the authors are that mothers should have potentially dangerous moles in their children removed before puberty; the prenatal examination should include the search for junction nævi and any that are found should be removed; that pregnancy should be avoided for three to five years after treatment for melanoma. They emphasize also the necessity for microscopic examination of any mole that is excised. Lesions may be excised without realization of their true nature, and patients with secondary melanoma in whom no primary growth can be found often admit to the recent removal of an "ulcerated wart". Melanoma is not a hopeless condition, but until there is a simple drug which can cure cancer, success in treatment depends upon early recognition of the lesion and the type of nævus likely to become malignant.

HYPOTHERMIA AS AN AID TO SURGERY.

One of the most recent advances in the general technique of performing major surgical operations has been the development of processes designed to reduce the general metabolism of the body in order to give the surgeon the advantage of time in the necessary interference with physiological functions. The object of inducing hypothermia is twofold. In the main, hypothermia allows the surgeon to restrict temporarily the circulation of blood to vital organs; the second beneficial effect is the actual slowing of physical activity in the heart. It is therefore not surprising that the lowering of the temperature of the patient is particularly useful in cardiac surgery. For some operations on the heart, hypothermia is a necessity. However, hypothermia induced for surgical procedures is still largely experimental, and though it may prove eventually valuable in other fields of surgery, a wider application at the present time would appear to be unwarranted. E. A. Bering, J. A. Taren, J. D. McMurrey and W. F. Bernhard[3] have found that in monkeys the general physiological effects are a diminution in the pulse rate, a slight decrease in the mean arterial blood pressure, and prolongation of the electrocardiographic *Q-T* interval. There is a progressive decrease in the cerebral blood flow associated with an increase in the cerebral vascular resistance, and there is a sharp fall in cerebral oxygen requirements between 31° C. and 27° C. The general decrease in

[1] *J. Bone & Joint Surg.*, June, 1956.
[2] *Cancer*, March, 1956.

[1] Allen, Arthur T. (1954), "The Skin", St. Louis: C. V. Mosby Company.
[2] *Surg., Gynec. & Obst.*, February, 1956.

oxygen consumption is accompanied by a fall in the rate of glucose metabolism.

One of the particularly useful results of the lowering of metabolism induced by hypothermia is the considerable reduction in shock to be expected from prolonged and exhaustive surgical interference. As W. F. Bernhard *et alii*[1] have shown, this reduction in the response to stress is attributable to inhibition of the adrenocortical 17-hydroxycorticoid output, due partly to depressed production and partly to the depression of the conjugation of steroids by the liver. Other changes which might be useful to the surgeon when the patient is in a hypothermic state have not been extensively studied. Suggestions that hypothermia might interfere with the coagulation of blood have not been confirmed. In fact, V. L. Williams and C. R. Hanlon[2] have found that local hypothermia, at least, reduces the blood loss in the subcutaneous tissues.

D. N. Ross[3] suggests that until more is known of the altered physiology at low temperatures, cooling should not be continued below 25° C. In future, if low temperatures can be safely achieved, unhurried intracardiac manœuvres may become possible. If not, a combination of limited hypothermia and a simple artificial heart-lung apparatus may prove to be the best. Renal and mesenteric vessels may now be clamped for at least an hour, and the surgical treatment of the liver may be greatly facilitated. It appears to be possible to clamp off the blood supply to the cooled brain for up to fifteen minutes. Ross further suggests that the best method of inducing hypothermia is by the cooling of the blood-stream. This is accurate and rapid, local tissues are not over-cooled, and the hypothermia may be rapidly reversed after the operation. A technical difficulty lies in the slowing of the blood flow as cooling proceeds so that the rate of cooling also becomes slower. Interference with the arterial blood supply also has its dangers, and Ross has devised a system of venous cooling in which blood is taken from the superior to the inferior *vena cava* and is cooled on the way. A pump in the circuit ensures a constant flow. Ross reports that cooling prolongs the clotting time of the blood so that no anticoagulant is needed. Linear fall in the pulse rate, oxygen consumption and cardiac output occur, according to the temperatures. Falls in blood pressures occur after an initial delay, and the respiratory centre may be depressed below 30° C. An inexplicable rise in the hæmatocrit reading by as much as 10% may occur. A relative excess of oxygen occurs owing to the lowered metabolism and the increased solubility of the oxygen; at the same time a respiratory acidosis may easily arise.

The most important complication of induced hypothermia is that of ventricular fibrillation. In experiments on dogs, A. Riberi *et alii*[4] found that ventricular fibrillation could be prevented by the blocking of the sino-auricular node with procaine. H. B. Shumacker *et alii*[4] found experimentally that ventricular fibrillation could always be prevented by bilateral sympathetic denervation. A good degree of protection was also afforded by the administration of "Arfonad" or the stimulation of the right vagus nerve to provoke bradycardia. N. E. Shumway and F. J. Lewis[4] found that, in dogs, fibrillation could always be reversed by a combination of the injection of epinephrine solution into the left ventricle and by the application of several electrical shocks to the myocardium. However, not all recoveries were permanent, and Shumway and Lewis suggest that coronary perfusion used as an adjunct to hypothermia may enable longer and safer periods of cardiac occlusion to be carried out.

E. Husfeldt and O. Secher[5] have treated three patients who developed ventricular fibrillation under hypothermia by surface cooling. In each case, fibrillation developed during cardiac interference, and massage and defibrillation by the electrical method were unsuccessful. Saline at 40° C. was poured liberally into the thoracic cavity, and after warming had taken place the defibrillator successfully induced the normal rhythm. In two patients in whom ventricular fibrillation lasted for one hundred and fourteen minutes and fifty minutes respectively, recovery was complete; in the third patient, in whom the fibrillation lasted for one hundred and nine minutes, there was evidence of some damage to cerebral function.

[1] *Ann. Surg.*, February, 1956.
[2] *Ann. Surg.*, May, 1956.
[3] *Brit. J. Surg.*, May, 1956.
[4] *Ann. Surg.*, February, 1956.
[5] *Thorax*, June, 1956.

SEX DETERMINATION.

It seems not unnatural that the factors associated with the determination of fœtal sex should have intrigued man from the dawn of his existence. In primitive societies the sex of the children is of considerable economic importance. It is only in very recent times, since the removal of many of the social limitations surrounding the female sex, that the sex of the children of a marriage is not as important as it used to be. Thus modern man has inherited, and is rapidly forgetting, a great deal of folklore and of, literally, old wives' tales regarding ways in which the sex of the fœtus may be influenced and may be revealed. On the latter count, recent researches have stirred some interest, though the assessment of fœtal sex can hardly be more than of academic importance. On the ways in which the sex of the fœtus may be influenced, superstition has not been replaced by scientific fact. It is now generally accepted that the sex of the fœtus is entirely attributable to the chance of fertilization of the ovum with spermatozoa which contain the X or Y chromosomes. No factor is known to influence this chance association except, as in veterinary practice, by the artificial selection of the desired spermatozoa. It has been argued that if the determination of fœtal sex is purely by chance then, by the law of averages, the births of different sexes of infants should be equal. In fact, variations of bias of sex determination do occur in whole populations, and while these variations are comparatively small, it is difficult to furnish an entirely satisfactory explanation on pure chance. A. K. Maxwell[1] has added a new piece of confusion to delight the sceptics and the curious alike by propounding what he deems to be an apparently unknown biological law. Some earlier biological research led him to the suggestion that, in the animal kingdom, the weaker of two sexual partners tends to reproduce its own sex. Accordingly, Maxwell has now made a small survey of families in which the sex of the three or more offspring was the same. In each case both parents were assessed as strong or weak, healthy or delicate. When this was done the correlation between parent type and offspring sex gave some surprising results. In Maxwell's series, 20 powerful men produced 75 daughters and only six sons. At the same time, 20 strong, robust women, each with a delicate husband, produced 84 sons and only ten daughters. Thus in each case the progeny of the marriage tended to be of the same sex as the weaker parent. In a group of 20 couples, each equally strong and healthy, there were 70 sons and 66 daughters. The determination of sex appeared to be one of chance. Maxwell makes the final suggestion that even temporary reduction in the vitality of one partner of the marriage may result in the reproduction of that sex, even though that particular partner is normally the dominant one of the marriage. The weakness of such a survey, even if carried out on a satisfactorily large scale, lies in the difficulty in correctly deciding which is the dominant partner of any particular marriage. It could also be a remarkably efficient way of losing friends, especially amongst the fathers of several sons. That valuable and pathetic literary character of the weak little man with a powerful wife and a line of powerful daughters is, in fact, rarely found in real life. At any rate, the idea that the weak partner reproduces his or her own sex is an interesting one, and perhaps it is worthy of further discreet observation.

[1] *M. Press*, May 30, 1956.

Abstracts from Medical Literature.

PÆDIATRICS.

Epilepsy and Cerebral Palsy.

B. H. Kirman (*Arch. Dis. Childhood*, February, 1956) suggests that children who have both cerebral palsy and epilepsy are liable to be deemed ineducable and mentally defective, whatever their intellectual potentialities. Epilepsy in association with cerebral palsy is attributable to a gross brain lesion. This is probably true of many other cases of epilepsy, including the "idiopathic" variety. In a large series of children with neurological abnormalities the author found that 45% of the cases of cerebral palsy were also classed as epileptic. The athetotic and ataxic patients had a low incidence of epilepsy. The frequency of fits in epileptic subjects, as recorded, increased after infancy but declined with puberty. The evidence suggested that the children with both cerebral palsy and epilepsy are likely to be less intelligent on the average than those without this complication. The electroencephalographic recordings revealed that "epileptic type" phenomena also occurred in patients who had not had fits recorded in hospital. As all the patients in this group, except the small minority of athetotic and ataxic patients, had gross cortical lesions, there is no evidence in the author's series to support the thesis of subcortical epileptic foci. Morbid anatomy revealed a wide variety of lesions, of which reduction in brain size and gliosis were the most constant. All the brains studied were very abnormal, and most were found to have gross structural abnormalities.

Radiological Findings in the Lungs of Premature Infants.

J. Fawcitt (*Arch. Dis. Childhood*, April, 1956) has made a radiological examination of the lungs of 190 infants in a premature babies' ward. Of these babies, 49 did not survive, and of the remainder, 25 had pathological changes in the radiographs of the lungs, and clinical respiratory distress. Serial radiographs of a number of full-term children at Cæsarean section, from eight seconds to twelve minutes after the cutting of the cord, have revealed that there is complete expansion of the lungs radiologically in the majority by six minutes. This rapid adequate aeration is considered to be of far greater practical significance than the microscopic unexpansion of small areas of lung. A different state of affairs obtained in the radiographs of the lungs of the premature infants, in whom it was observed that in practically every chest examined radiologically within an hour of birth there were some fairly well marked areas of unexpanded lung. These areas were mainly in the lower lobes and were undoubtedly more common on the left than on the right side. In uncomplicated cases, these areas showed fairly complete expansion within six to eight hours. The author suggests that prematurity and immaturity in themselves may lead to unexpansion of the lungs for a variety of interrelated reasons. This type of failure of expansion follows the pattern of primary atelectasis or unexpansion, which is seen in other forms of this catastrophe, and can be distinguished from them only by the maturity of the infant and a knowledge of the time after birth when the radiograph has been taken. Several types of intracranial injury, which may occur during parturition, may cause severe damage of the infant's respiratory centre. The infant does not make adequate respiratory efforts, and the lungs never become adequately expanded. The radiological appearances are not distinguishable from those of grossly premature infants except by their greater bone maturity and size. When the intracranial lesions are at first insufficiently severe to prevent initial expansion of the lungs, areas of atelectasis become apparent in the radiographs as the respiratory efforts begin to fail. The author considers that the guiding radiological feature in the diagnosis of progressive intracranial damage is the discrepancy in the relatively slight degree of atelectasis in the lung fields, and the severity of the respiratory distress. In the case of pulmonary hyaline membrane causing respiratory failure, as the disease progresses the mottling, seen radiographically, takes on a coarser and more generalized appearance followed by atelectasis of a blotchy type. Eventually, after a period of increasing collapse and consolidation, the blacked-out lung of the terminal stage makes its appearance. The author does not consider that it is possible to distinguish between the pneumonias of the immediate neonatal period whatever the cause. The common pattern is that of a bronchopneumonia seen radiologically. The condition of diffuse primary alveolar atelectasis has been observed radiologically as early as seven minutes after birth, when it may be already distinguishable from the normal, and it may also, in the opinion of the author, be distinguished from hyaline membrane and thus given a more hopeful prognosis. Other conditions in which a radiological diagnosis may be made are those of hæmorrhagic disease of the newborn and congenital cardiac lesions.

Serum Bilirubin Levels in Relation to Kernicterus in Prematurity.

T. C. Meyer (*Arch. Dis. Childhood*, April, 1956) has made a study of the bilirubin levels in 93 premature babies. It was found early in this series that unless clinical jaundice was marked, there was no detectable bilirubin in the cerebro-spinal fluid; so in the latter part of the study estimations of the level of bilirubin in the cerebro-spinal fluid were restricted to babies with considerable jaundice. All babies who developed signs of kernicterus were submitted to lumbar puncture, and the bilirubin level was estimated in the spinal fluid. In the whole series 11 babies developed kernicterus. In all the babies, blood samples were collected on the second, fourth and sixth days after birth. The study revealed that babies under 2000 grammes in weight have serum bilirubin levels still rising on the sixth day; babies of from 2000 to 2500 grammes in weight have a serum bilirubin concentration levelling out by the sixth day; and for babies of weight greater than 2500 grammes the serum bilirubin level is falling by the sixth day. Premature babies who develop kernicterus have a generally higher serum level of bilirubin, and the majority have levels of over 18 milligrammes per 100 millilitres of serum at the onset of signs. Kernicterus is very likely to occur when serum levels of bilirubin rise above 18 milligrammes per 100 millilitres of serum. The author found that there appeared to be no critical level of bilirubin in the cerebro-spinal fluid at which staining of basal nuclei took place, and there was no correlation between the bilirubin levels in the serum and those in the cerebro-spinal fluid. It is suggested that all jaundiced premature babies should have serial bilirubin estimations. The frequency of those estimations should depend on the level of bilirubin and on the rate of rise of that level. It is suggested further that replacement transfusion may be effective in the prevention of kernicterus in babies whose serum bilirubin levels are above 18 milligrammes per 100 millilitres of serum, or in whom the rate of rise of the level is rapid.

Primary Renal Tumours of Childhood.

S. H. Johnson and M. Marshall, junior (*J. Urol.*, December, 1955) have made a study of 54 children with primary renal neoplasms. These comprised 59 Wilms tumours (four of these being bilateral), three papillary adenocarcinomata and two renal cell carcinomata. They consider that the survival rate of patients with Wilms tumours will increase if the treatment is standardized to early transperitoneal nephrectomy with post-operative irradiation therapy. The use of intravenous nitrogen-mustard therapy in the immediate post-operative period seems to lower the mortality rate still further. The younger the patient, and the shorter the duration of symptoms, the better the prognosis. Hæmaturia and abdominal pain are of grave import. When death occurs, it is usually within six months of the date of diagnosis. Patients who survive for two years may be considered cured, with only rare exceptions. Although post-operative irradiation of the tumour site has been given, this form of treatment leaves much to be desired; seldom does a Wilms tumour recur in the renal fossa, but rather it recurs as distant metastases, especially in the lungs. Total irradiation therapy is not feasible in infancy and childhood, because of severe depression of the bone marrow, resulting in aplastic anæmia. Therefore a method must be sought which is lethal to distant small cellular metastases, yet promises a low morbidity. Some good results have been achieved already by intravenous administration of nitrogen mustard in doses of 0·4 to 0·8 milligramme per kilogram of body weight in the immediate post-operative period. This is followed in two to three weeks' time by irradiation of the operative site. This preliminary work is of necessity a clinical study only, since in-vitro trial is not feasible because of the instability of nitrogen mustard in solution. Of the

59 patients, 18 had irradiation therapy only; these had inoperable conditions, some with extensive metastases. Thirty-one patients underwent nephrectomy; 26 of these had post-operative irradiation, two pre-operative irradiation, and two no irradiation at all. Intravenous nitrogen mustard therapy was used in 14 cases as adjuvant therapy. Of 49 patients who had some form of treatment, 14 are now living. Of the 14 patients treated with nitrogen mustard seven are now living; of the seven patients who died six had metastatic involvement at the time of this special therapy.

Cardiac Arrest During Strabismus Surgery.

E. J. Sorenson *et alii* (*Am. J. Ophth.*, May, 1956) report a case of cardiac arrest in a child during strabismus surgery which occurred when the medial rectus muscle was stretched. Since that case the authors have noticed arrhythmias of various types in every case of operation for strabismus. Bradycardia and other types of arrhythmia developed with tension on the muscle during mobilization. In each instance the arrhythmia ceased as soon as tension on the rectus was released. Pre-operative administration of atropine is probably a safeguard against the development of cardiac arrest. The arrhythmia is probably due to stimulation of the terminal branches of the fifth nerve, which in turn activate the vagus.

ORTHOPÆDIC SURGERY.

Osteotomy in Osteoarthritis of the Hip.

J. P. Campbell and J. P. Jackson (*J. Bone & Joint Surg.*, May, 1956) state that the ideal treatment for osteoarthritis of the hip should give a stable, painless joint, with a full range of movement and no shortening. They have reviewed 46 femoral osteotomies performed during a period of twenty years. Osteotomy is carried out at about the level of the lesser trochanter. The authors believe that the only essential features of the operation are (i) to divide the bone, and (ii) to correct adduction deformity by abduction of the shaft at the site of osteotomy. The exact level of the osteotomy and the amount of displacement appear to be of secondary importance. A study of these cases has convinced the authors that femoral osteotomy is really a worthwhile operation, as some 87% of their patients were largely relieved of pain and a further 6% were improved. Recently, the problem of immobilization has been overcome by the use of internal fixation by means of a nail and by a plate of modified design; this allows adjustment in two planes between the nail and plate. Internal fixation has widened the field of operation.

Transposition of the Tibialis Anterior in Paralytic Talipes Calcaneus.

C. H. Herndon, J. M. Strong and C. H. Heyman (*J. Bone & Joint Surg.*, July, 1956) emphasize the value of early transference of the *tibialis anterior* into the heel, in selected patients, as an efficient method of preventing the development of a serious paralytic *talipes calcaneus*. It is pointed out that early surgical intervention, eighteen months or so after the onset of acute poliomyelitis, is indicated in order to eliminate the deforming force and to utilize available motor power for pushing off from the foot. If the *tibialis anterior* is paralysed, either the peroneals or the *tibialis posterior*, or both, are transferred into the heel, depending upon their strength and the strength of the long extensors of the toes. Next to the gastrocnemius and the soleus, the *tibialis anterior* is the strongest muscle in the foot and will most nearly replace lost plantar flexion. The authors have found that transplantation of the *tibialis anterior* alone has given better power of plantar flexion than transplantation of combined peroneals and *tibialis posterior*. Five out of 12 patients who have had the *tibialis anterior* transfer are able to take all body weight on the toes of the affected foot. Operative technique is described. Through three incisions, the *tibialis anterior* is divided at its insertion, withdrawn anteriorly to three inches above the ankle joint and then passed posteriorly through the interosseous membrane and sutured to the *os calcis* at the insertion of the *tendo Achillis*. The authors believe that a tendon-to-bone attachment gives better results than the easier tendon-to-tendon suture. The leg is immobilized in plaster for six weeks, and the transplant is protected in a brace for a further three to four months.

The Injection of Hydrocortisone into Degenerated Intervertebral Discs.

H. L. Feffer (*J. Bone & Joint Surg.*, June, 1956) has tried the effect of the local instillation of hydrocortisone into the acutely swollen intervertebral disc and has studied the results with simultaneous radiological examination of the disc. The results are reported for the first 60 patients after a maximum follow-up period of eight months. In five patients no abnormality was detected and no relief was obtained. Radiological study in 55 patients demonstrated pathological lesions of the intervertebral discs. Thirty-seven patients obtained rapid remission of symptoms after the injection of hydrocortisone; 18 failed to respond. Surgical exploration of the involved discs has been performed in 16 of the 18 failures, and the disc in each was irreversibly changed. The author believes that these results suggest a method not only of rapidly interrupting the course of an acute intervertebral disc herniation, but also, more significantly, of demonstrating early in the course of the episode which discs are destined to require surgical intervention, in spite of adequate conservative care. In this way, much of the morbidity and economic loss characteristic of these cases could probably be averted. The technique of injection, which is performed with the patient lying on his side on an X-ray table, is described. The disc is punctured by inserting a four-inch regional block needle through an anæsthetized area 1·5 centimetres lateral to the upper margin of the spinous process of the subjacent vertebra. In this way the *ligamentum flavum* is penetrated just medial to the facet, and the dura is avoided in most instances. Entrance into the *annulus fibrosus* is accompanied by a sensation of rubbery resistance; after piercing the annulus, the needle is inserted about one more centimetre. The two lower lumbar discs are always punctured unless there is a definite reason for not puncturing one in particular, and unless there is a reason to puncture one at a higher level. With the needles in place, a lateral skiagram is made, and the accuracy of the position of the needles prior to injection is verified. The material to be injected is made up in a syringe by mixing three millilitres of a 35% solution of iodopyracet with one millilitre of a solution containing 50 milligrammes of hydrocortisone. Each intervertebral space is injected under moderate pressure, and the needles are withdrawn. Antero-posterior and lateral skiagrams are then made. The capacity of each disc is noted, as well as the relative pain experienced at each injection. It is held that these factors also aid in determining which one of the multiple degenerated discs has clinical significance. Trunk movements are made to help diffusion of the solution; the patient is allowed to use his own discretion regarding activity until the degree of response is determined.

Functional Bracing of the Arm.

E. R. Schottstaedt and G. B. Robinson (*J. Bone & Joint Surg.*, June, 1956) state that operative reconstruction, if properly conceived and executed, is always superior to the use of an external appliance. However, functional bracing of the arm will, occasionally, serve to supplement surgical results. It will also add tremendously to the function and work efficiency of a large group of patients in whom surgical therapy is either totally impossible or of slight value without such supplementation. A flail upper extremity should never be amputated, for it may very well serve as a superstructure for a successful functional brace. The authors point out that the patient must have a source of power which can be harnessed. An analysis of a patient's needs should include special attention to the essential motions to be replaced; these may be grasp, pronation, supination, elbow flexion and extension, internal and external rotation of the shoulder, and shoulder flexion. The brace must be light and comfortable to wear, and, if possible, should be so constructed that the patient can put it on or take it off by himself. The necessary working area for the desired activity should be known and properly planned for. Arm braces at the present stage of their development can replace many normal activities, but not all of them. They should be planned to accomplish specific tasks. Arm braces must work from a stable base on the patient's body. Harnessing must supply a satisfactory range of motion and power for the activities desired. A brace must be relatively simple in operation, so that its value is worth the patient's effort in making it function. The braces must be sufficiently simple and sturdy, so that frequent breakdowns do not occur and frequent adjustments are unnecessary.

British Medical Association News.

SCIENTIFIC.

A meeting of the Victorian Branch of the British Medical Association was held on April 21, 1956, at the Ballarat and District Base Hospital. The meeting took the form of a series of clinical demonstrations by the honorary medical staff of the hospital. Part of this report appeared in the issue of September 29, 1956.

Multiple Malignant Neuromata.

Dr. W. T. Greening (Ballarat) showed a male patient, aged twenty-three years, who had been referred to him on December 6, 1954, with a mass the size of a marble in the right axilla. It was freely movable and firm to feel. The patient requested him to remove it. On December 9, under local anæsthesia, the mass was exposed. It was found that the axillary vein was antero-medial to it. Further exposure of the mass showed it to be in the ulnar nerve. The surface was smooth and pearly. It was incised longitudinally; yellowish fluid exuded, and the tumour mass had a ragged appearance. At that stage the patient complained of very severe pain down the arm. For relief he needed 0·5 grain of morphine. Dr. Greening said that he removed a piece from the anterior aspect for the preparation and microscopic examination of sections, and closed the wound. The following was the report:

> The tumour tissue consists of markedly cellular spindle cell tissue and fibro cellular tissue. In places the arrangement is in interlacing strands. There are two collections of markedly dilated congested blood-vessels. These areas are hæmangiomatous and there are some hæmorrhages in the adjacent tissues. There is some fibrinous clot in a few of these blood vessels, the tissue around is loose cellular reticular tissue. I would regard as sarcoma mainly spindle cell.

The patient was referred to Dr. F. Morgan, whose recommendation was to remove the tumour and part of the nerve and dissect the axilla. That was done on January 6, 1955. Trouble was encountered when pieces of silk were discharged.

In March, 1955, a course of deep X-ray therapy to the axilla was begun. Examination of the patient by Dr. John O'Sullivan during the course of that therapy revealed a mass in the right inguinal region below Poupart's ligament.

On July 25, 1955, Dr. Greening cut down on the mass and found that it was in the femoral nerve. He removed a piece for the preparation and microscopic examination of sections, and also the neighbouring glands. The following report was given:

> The larger pieces consist mainly of fibrous and spindle cell tissue. Some portions are more highly cellular and in some areas the arrangement is that seen in a Neuro Fibroma. Portions consist of vascular reticular tissue which shows round cell infiltration and is in places œdematous. As the tumour is not all encapsulated and as some portions are markedly cellular I would regard it as a Neuro Fibro Sarcoma of local malignancy. 3 small lymphatic glands sectioned show hyperplasia with numerous small follicles but no evidence of malignancy.

Dr. F. Morgan was again consulted. Dr. John O'Sullivan thought that deep X-ray therapy would not help. Dr. Morgan reluctantly advised removal of the tumour and part of the femoral nerve, and suggested using the ulnar nerve as a graft. Dr. Greening said that at that time he found a small mass in the left supraclavicular region. A conference was held with the parents of the patient. They decided not to proceed with the course suggested. A further conference was held with the patient's fiancée and her parents. His fiancée decided to go ahead with the wedding.

Professor Maurice Ewing (Melbourne) said that he had never seen a similar case. He wondered whether the patient had a preexisting multiple neurofibromatosis on which a malignant condition had been grafted.

Carpal Tunnel Syndrome.

Dr. H. D. Drury (Ballarat) discussed the carpal tunnel syndrome. He said that for many years there had been recognized a condition called acroparæsthesia of the hands, in which the patient complained of numbness, tingling and burning pain in the hands at night. It had also been appreciated that those symptoms were confined to that part of the hand supplied by the median nerve, and that there might also be wasting of the thenar muscles supplied by that nerve. It was now known that that clinical picture might be caused by compression of the median nerve in the carpal tunnel. The picture varied from the mild case, in which there were only a little tingling and puffy stiffness of the fingers after a night's rest, to the severe case, in which sleep was almost impossible owing to an intense tingling, burning pain in the radial three and a half digits and the associated part of the palm. Aching pain might radiate up the forearm and even to the shoulder. The pain was relieved by movement—in mild cases in a few minutes by "working" the wrist and fingers. In severe cases, the patient might spend most of the night walking about moving his arms in order to keep the pain at bay. Pain was rarely troublesome during the day while the patient was active, but there might be a complaint of clumsiness of the hand owing to sluggish movements and insensitive fingers. Occasionally there was a visible swelling in the line of the median nerve immediately above the wrist joint, and if that was tapped Tinel's sign might be elicited. A sphygmomanometer cuff placed on the arm and inflated to just below the systolic pressure would, in most cases, bring on the typical burning pain in the hand in less than one minute.

In differential diagnosis one had to consider brachial neuritis; the cervical rib, *scalenus anterior* and thoracic outlet syndromes; circulatory upsets such as Raynaud's phenomenon; compression or other lesion of the median nerve in its course through arm and forearm; and possibly ulnar nerve lesions. With the exception of aching pain radiating up the limb, all the symptoms and signs of compression of the median nerve in the carpal tunnel were localized to the wrist and median nerve territory of the hand.

Dr. Drury went on to say that the cause of the condition was narrowing of the carpal tunnel and consequent compression of the median nerve. That could occur in dislocation of the lunate bone, in neglected fractures of the scaphoid and in arthritic conditions of the carpus generally. More commonly, the narrowing was due to swelling and thickening of the fibrous tissue structures forming the tunnel or traversing it. During the menopause in women there might be generalized swelling and thickening of fibrous tissues, and a similar condition might accompany pregnancy and acromegaly. In rheumatoid arthritis there was considerable swelling of all periarticular structures; or the narrowing might be due to fibrous thickening of the transverse carpal ligament—a type of *tenovaginitis stenosans*. In practice, five out of every six cases occurred in women aged between forty and fifty years. In the matter of treatment it was convenient to divide cases into two groups—(i) those occurring in women at the menopause, the condition usually coming on gradually over several years, and (ii) all others, the condition usually being present for less than three months. In both groups, in most of the mild cases the condition caused little inconvenience and responded to rest. In the menopausal group, in the less severe cases the condition generally responded well to small doses of œstrogens; but if that failed, and in severe cases, especially if signs such as muscle wasting and interference with cutaneous sensation were present, operative division of the volar carpal ligament was the treatment of choice. The treatment was surgical in all other cases in which the condition caused other than the mildest symptoms. The operation was best performed under general anæsthesia and with a pneumatic tourniquet applied to the upper part of the arm. A transverse incision in the distal carpal crease exposed the proximal part of the volar carpal ligament. The deep fascia was incised along the ulnar side of the *palmaris longus* tendon, or if that structure was absent, in the mid-line of the limb. In either case, the median nerve was exposed, and usually looked œdematous and swollen. A grooved probe was then passed under the carpal ligament to the ulnar side of the median nerve, well into the palm, and a tenotome with its edge towards the ligament was then slid down the probe, dividing the ligament as it went. It was important to make sure that the distal edge of the ligament was divided, as that was generally the tightest part of the tunnel. The ligament divided, the skin only was sutured and a firm bandage was applied. After operation relief was generally rapid and complete, although wasting of thenar muscles often did not recover.

Dr. Michael Kelly (Melbourne) said that he was glad to hear Dr. Drury's reference to rest. In polyarthritis of the wrist it was common to find pain and burning in the fingers, which he attributed to median nerve involvement, and many patients complained of cold and numbness in the fingers,

which he attributed to sympathetic involvement. Rest in a plaster splint gave rapid relief in such cases.

DR. K. J. NEERHUT (Ballarat) asked whether a non-tuberculous "compound palmar ganglion" was in reality a case of carpal tunnel syndrome with swelling above and below the carpal ligament.

DR. D. B. SKEWES (Ballarat) asked what was the best position for immobilization, and whether hydrocortisone was of use.

DR. J. H. CLOKE (Melbourne) said that there was always an increase in the volume of the contents of the carpal tunnel, the tunnel itself being usually of normal size. The main differential diagnosis was from brachial neuritis due to osteoarthritis of the neck. If the short abductor and opponens of the thumb were affected, operation should be early, as changes might be irreversible.

Dr. Drury, in reply to Dr. Neerhut, said that in the case he had reported most of the swelling above and below the transverse ligament was from œdema. In reply to Dr. Skewes, Dr. Drury said that he considered the wrist should be immobilized in flexion; but extreme flexion was painful, and he preferred an intermediate position most comfortable to the patient. He had not considered the use of hydrocortisone.

X-Ray Films in Intestinal Obstruction.

DR. D. B. SKEWES and DR. HEATHER DICK (Ballarat) presented illustrative X-ray films from cases of intestinal obstruction, with the clinical histories.

The first patient was a male war pensioner, aged fifty-eight years, who had been admitted to hospital on March 7, 1956, sixty hours after the onset of severe colicky pain, localized mainly to the left of the umbilicus and accompanied by vomiting. Since the onset of the pain three enemata and one bowel washout had been given, and only a few hard fæcal lumps had been returned. Dry retching had replaced vomiting, and at no stage had fæcal vomiting occurred. Investigation revealed that the patient had a history of gastric ulcer, hypertension and war neurosis.

On examination of the patient, his temperature was 99° F., his pulse rate was 100 per minute and his respirations numbered 22 per minute. His blood pressure was 130 millimetres of mercury, systolic, and 100 millimetres, diastolic. His tongue and skin were dry and his breath was fæcal. His abdomen was distended, and resonance was present over the epigastrium and on the left side. No localized tenderness, no mass and no bowel sounds were detected. Rectal examination revealed hard fæces. X-ray examination revealed three distended coils of jejunum in the upper part of the abdomen, with broad fluid levels. No other dilated bowel was seen. The appearances were those of high jejunal obstruction. Examination of the blood revealed that the hæmoglobin value was 123%; the blood was of group B. The urinary excretion of chlorides was three grammes per day; the specific gravity of the urine was 1020.

At operation a right paramedian incision was made. Free fluid was found in the peritoneal cavity, and hard lumps of fæces were present in the caecum; the ileum and the lower part of the jejunum were collapsed. Coils of the upper part of the jejunum were grossly distended and of a reddish-purple colour. In the apex of the mesentery there were dark streaks indicative of thrombosed vessels. "Procaine" solution (1%) was injected into the mesentery, and hot packs were applied to the bowel, with an improvement in colour. The wound was closed without drainage. Intravenous therapy and gastric suction were continued until March 9, when bowel sounds were present. The further course was uneventful, and the patient was discharged from hospital on March 22.

The second patient was a retired man, aged sixty-nine years, who had been admitted to hospital on March 8, 1956, having two days previously developed severe colicky abdominal pain which radiated through to the back. Vomiting had commenced twenty-four hours prior to his admission to hospital, and the vomitus on his admission was brownish and bile-stained. He had had no bowel action for the past three days, prior to which he had had intermittent diarrhœa. He had had many attacks of what was thought to be gall-stone colic over a number of years.

On examination of the patient, his pulse rate was 100 per minute and his respirations numbered 24 per minute. His blood pressure was 130 millimetres of mercury, systolic, and 80 millimetres, diastolic. His tongue was moist, his breath was not fæcal, and his skin was in a good state of hydration. The abdomen was distended and resonant; it was tender all over, and rigidity was present, more pronounced on the right side. No bowel sounds were detected. Rectal examination revealed no abnormality. X-ray examination revealed that the jejunum, the ileum and part of the large bowel were all distended. Bismuth was distributed liberally through the jejunum. There was a calcified shadow in the right flank, which it was thought might be a gall-stone.

At operation a right paramedian incision was made. Blood-stained fluid was present in the peritoneal cavity. Pronounced distension of the small bowel was present with less pronounced distension of the large bowel. There was fat necrosis of the omentum and mesentery. The pancreas was nodular, and the gall-bladder was impalpable, owing to the presence of dense adhesions. The wound was closed without drainage. After operation intravenous therapy and gastric suction were continued. Crystalline penicillin was administered, in a dosage of 500,000 units *statim* and 100,000 units every three hours, with streptomycin, 0·5 gramme every twelve hours. Morphine was administered in a dosage of one-sixth of a grain as required. The bowels opened twenty-four hours later, and fæcal fluid and soft fæces were passed at frequent intervals thereafter. Progress was satisfactory for thirty-six hours; then the patient's condition deteriorated, and death occurred on March 11.

The third patient was a married woman, aged thirty-three years, who had been first examined on March 16, 1956; her last menstrual period had occurred on January 20. Three days prior to examination she had developed severe lower abdominal pain. One day later a pink, watery, vaginal discharge had begun, the pain increasing in severity. Her hands and feet "went dead", and she had pain in the arms, neck and left hip. She had one child, born on August 3, 1943. Investigation revealed that she had suffered from psoriasis, that she had three years previously undergone an appendicectomy and had suffered from "nervous dyspepsia", and that she had a hyperæsthetic skin—she was always cold, and her hands "went dead" frequently.

On examination of the patient, her temperature was 98° F., her pulse rate was 76 per minute and her respirations numbered 20 per minute. Her blood pressure was 130 millimetres of mercury, systolic, and 84 millimetres, diastolic. No abnormality was detected in the abdomen. A vaginal examination revealed a firm, slightly enlarged uterus, with thickening and tenderness in the left fornix; some hæmorrhage was occurring. A diagnosis of incomplete abortion, possibly ectopic gestation, was made, and admission to hospital was advised.

On the following morning placental material extruded. At 7 p.m. the patient had a sudden onset of severe epigastric pain and vomiting—her evening meal had consisted of onions, tomatoes and cucumber. She had no back pain. Intermittent pain and vomiting of clear fluid continued into the following day, and X-ray examination of the abdomen failed to reveal any abnormality. Her condition improved during the afternoon, but pain and vomiting recurred on March 19. Her temperature, pulse rate and blood pressure remained unaltered. She was given "Amphogel" and 50 milligrammes of "Largactil", and she slept for eight hours; the pain then recurred, and the appearance of the vomitus suggested bile-stained "Amphogel". X-ray examination revealed two loops of air-filled jejunum in the left upper quadrant of the abdomen, which suggested an intestinal obstruction.

At operation on March 20, curettage was followed by laparotomy through a right paramedian incision. There was free fluid in the peritoneal cavity. The ileum was collapsed, and a band from the appendiceal wound was stretched tightly across the lower part of the jejunum. Multiple early gangrenous patches were present around the site of the band, which was divided, and other adhesions were freed. The application of hot packs to the bowel resulted in recovery of colour. The wound was closed without drainage, and the post-operative course was uneventful.

DR. J. K. GARDNER (Warrnambool) said that he thought it unwise to give enemata and washouts in cases of obvious small bowel obstruction.

DR. HAMLEY WILSON (Melbourne) asked whether the first case described was one of mesenteric thrombosis, the "masquerader of the acute abdomen". Such cases were difficult to diagnose; but when a patient presented with an "acute abdomen" with the signs and symptoms of every cause of such a condition, it was probably a case of mesenteric thrombosis.

Dr. Skewes agreed with Dr. Gardner's view on the undesirability of enemata and bowel washouts; he pointed out that in the case presented they had been given before the patient came to Ballarat.

Dr. Dick said that a recent Scandinavian paper on mesenteric thrombosis showed that almost all cases were misdiagnosed, and there was a mortality rate of 18 in 20 cases reported. She referred to the "colon cut-off" sign in acute pancreatitis, but said that it had not shown in the case reported. Enemata given before straight films of the abdomen were taken led to most misleading interpretations of fluid levels.

Pharyngeal Diverticulum.

Dr. P. N. Jenkins (Maryborough) showed a middle-aged female patient, who had had a pulsion pharyngeal diverticulum of the œsophagus successfully removed by a single-stage procedure. Dr. Jenkins said that he hoped the case would be of interest, as it provided another, not very common, example of how penicillin and the other antibiotics had enabled in many cases what was once thought a preferable two-stage procedure to be converted safely to a single-stage operation. The great hazard of mediastinitis appeared to have been considerably reduced in incidence by antibiotics, as in a similar way the incidence of peritonitis had been reduced in connexion with resection and anastomosis of the large bowel.

Dr. Jenkins then pointed out the salient features in the patient's history, which were common to patients with lesions of that type. The first was progressive difficulty in eating and swallowing (especially solids) associated with a choking sensation until, although normal hunger remained, practically only liquid foods could be tolerated, and the process of eating became exceedingly protracted. Another feature was a history of two and a half years' duration without much loss of weight. The third was a clacking noise often produced on swallowing, and especially noticeable when the patient retired at night. Yet another feature was regurgitation of food some hours after it had been taken. Some *fetor ex ore* was noticed, for which the patient was in the habit of using mouth washes. Thickness in the voice was noticed at times from possible pressure on the recurrent laryngeal nerves. Also at times the patient would find it momentarily difficult to speak at all, for reasons that were not clear. She also had some dyspnœa, which was troublesome at night when she was lying down. Difficulty was experienced in placing herself in a position for easy breathing. She could not bear the bedclothes up around her neck. There was no cough or pulmonary affection in this case, which might have been brought about by aspiration of stagnant material from the diverticulum often containing a rich mixture of mouth organisms.

Dr. Jenkins went on to say that the diagnosis was clinched by X-ray studies from various angles during fluoroscopic screening. The contrast medium was seen to pass down into the pouch, and then to spill over anteriorly down the œsophagus. A pool resided for some time in the fundus of the sac with the production of a horizontal fluid level. Since most diverticula progressively increased in size with time, and since the presence of a diverticulum was a possible menace to health, particularly from the danger of aspiration of foul material, and also owing to the fact that the patient under discussion was having so much bother with eating, operation for removal was advised. The question then arose as to whether the diverticulum should be attacked surgically in one or two stages. Many surgeons had advocated the two-stage procedure particularly for large sacs—notably Lahey in America, who preferred it in all cases—wherein the first stage consisted of freeing the sac and suspending it to the sterno-hyoid muscle or deep fascia. Some large diverticula might even be brought out of the wound and attached to the skin. That enabled the pouch to drain and remain empty and reasonably clean, and so to be in a fitter state for resection in the second stage in eight or ten days' time. Also the walling off of inflammatory changes caused by the first-stage operation of diverticulopexy would lessen possible cellulitic infection spreading to mediastinitis, should contamination occur at the resection stage.

In the case under discussion the one-stage procedure was preferred for the following reasons: (i) A one-stage procedure was always desirable for both economic and technical reasons, provided it did not appreciably increase the operative risk. (ii) The diverticulum was fairly small (although producing severe symptoms), and not foul as far as could be ascertained on clinical examination. (iii) In the presence of tissue reaction, such as would be met at the second stage, identification of important structures was more difficult, and therefore there was greater danger of injury to them. (iv) There was a greater danger of sutures cutting out if resection was undertaken when the tissues were indurated and friable, as would be possible at the second-stage operation. That might favour inflammation from leakage, possibly fistula formation or recurrence. At operation, through a vertical incision (though a transverse incision would have been better cosmetically), the neck of the sac appeared to be larger than anticipated. It could not be tied easily. The sac was excised, and the mucosa and muscle layers were sutured separately with fine silk sutures. There was no œsophagoscopic transillumination or painting of the sac before resection was employed. A small piece of rubber drainage tube was used to drain beneath the deep fascia away from the resected area. After operation the patient was nursed in a flat position with low blocks under the foot of the bed, and fed by an indwelling Ryle's tube for several days. Penicillin was given every eight hours. The flat position might not have been necessary; but it seemed that if there was any leak, gravity would not then favour the mediastinal route of spread. Dr. Jenkins said that so far the patient's symptoms had been completely relieved. Recurrences had been reported; but it was hoped that there would be no such complication in the present case.

Dr. George Swinburne (Melbourne) said that patients with pharyngeal pouches complained of regurgitation of undigested food. Some patients learned to wash out the sac by drinking quantities of fluid and regurgitating it before going to bed. Malignant change was uncommon. Operation was usually performed in a single stage, was safe with antibiotics, and was facilitated by the use of a Magill tube with preliminary backing of the sac with gauze. The important thing was to identify the neck of the sac, which was within the inferior constrictor muscle. The œsophagoscope gave help in some cases, but its use was not really essential.

Dr. Hamley Wilson (Melbourne) said that radiologically an œsophageal pouch appeared low in the neck, when in actual fact it was high. He found that an oblique incision in the upper neck crease was best, and packing was simple with the aid of a Magill tube, as the pouch was high and its neck wide. Complete identity of all layers was important, and he sutured in three layers. Nursing of such patients was difficult. He kept them lying on their faces for two days, and gave atropine for twelve hours before operation; "drying them up beforehand" lessened the risk of salivary leak.

Dr. N. F. Pescott (Ballarat) referred to a technique used by the late Basil Kilvington, who had freed the pouch by dissection and then fixed it "upside down".

Torticollis.

Dr. N. F. Pescott showed two patients with torticollis, a brother and sister. The girl was aged eighteen years and the boy twelve years. Dr. Pescott said that although in his opinion the condition was congenital in origin in both cases, in neither had it been diagnosed or recognized by the patients' family until they were aged ten or eleven years. However, from photographs taken from their family photograph album, it was obvious that the condition had been present for many years.

Dr. Pescott said that, before discussing the diagnosis and treatment in more detail, he proposed to say a few words about torticollis, its history, ætiology and clinical picture, as in his opinion the ætiology in the majority of surgical text-books was incorrect, and it seemed that some unknown factor had yet to be discovered. On the historical side, Alexander the Great had been called the "Hero of Torticollis", although Hulbert suggested that a slight inclination of the head had often been favoured by distinguished persons, and Alexander's otherwise symmetrical facial appearance did not suggest true torticollis. Antullus in the second century had advocated tenotomy for torticollis. In mediæval times subcutaneous tenotomy was carried out by practitioners at fairs in England, to the accompaniment of clanging of cymbals. It was possible that that was done to drown the cries of their victims. The cause of torticollis had been debated for many years. In 1891 Weitzel had suggested that the cause was a birth injury, and that theory appeared to have been copied and taught by many text-books ever since, but it left many problems unsolved. In 1906 Mickulicz had put forward an ischæmic hypothesis, comparable to that of Volkmann's ischæmic contracture. Mickulicz considered that the sternal head and middle fibres of the sternomastoid were supplied only by the superior thyroid artery, which was an end artery, and the circulation could be obstructed by putting the head in a certain position. However, in 1940 Griffiths showed that histological examination of sections of ischæmic muscle from a Volkmann's contracture revealed a characteristic muscle slough, whereas in sections of the sterno-mastoid were seen islands of muscle tissue surrounded by masses of cellular fibrous tissue. In

1930 Middleton had stated that the cause was a venous occlusion producing ischæmia in the muscle. He held that the venous drainage was from three vessels, and that the clavicular and sternal veins were obstructed during the second stage of labour. That theory had since been discounted by Altenburg in 1944, who showed that venous drainage was from at least eight vessels. The hypothesis of intrauterine malposition as a cause dated from Hippocrates, and was mainly revived by Chandler and Altenburg in the United States of America in 1944. They emphasized the high incidence of obstetric abnormalities, and in a series of over 100 cases found it to be 71%. They considered that the sterno-mastoid tumour seen shortly after birth might be the result and not the cause of torticollis. In the same year, 1944, Sippel had suggested that the inability of the wry-necked fœtus to engage normally could be the cause of the high percentage of breech presentations—stated at that time by some writers to be as high as 40%. In 1948 Chandler, after a review of 225 cases in *The Journal of Bone and Joint Surgery*, stated that two-thirds of his cases of torticollis occurred in breech presentations. He made the following statement:

> Intra uterine mal-position renders the sternomastoid muscle definitely atrophic, mal-developed, fibrous, shortened and ischæmic so that histological section of the muscle in a new born child shows a white fibro-cartilagenous glistening surface with no blood clot or residual pigment.

In 1955, Kieswetter, Nelson, Pallidina and Koop, writing in *The Journal of the American Medical Association*, reported an exhaustive survey and made the following statement:

> We share with others the uncertainty of the precise pathogenesis. Neither history nor histology support the theory of a neoplasm. The arterial supply to the muscle is multiple. We cannot agree with most writers who blame birth trauma. 35% of obstetrical abnormalities is much higher than the accepted 3% of breech presentations occurring with normal births.

They considered that the cause of torticollis was pressure over an area of muscle producing ischæmia of the vascular bed, rather than occluding a specific vein or veins, and that the abnormal delivery was a symptom of a preexisting, prenatal condition from uterine malposition, with resultant ischæmia and fibrosis of the muscles. The tumour at birth was part of the disease process which, if allowed to go on, would produce torticollis at a later date.

Dr. Pescott went on to say that he had not mentioned the hereditary hypothesis, which had never been in favour, or infective myositis, which was unconvincing and histologically different, or the nervous hypothesis concerning the atrophy of anterior horn cells. As far as the diagnosis was concerned, it was, of course, important to differentiate the congenital type from the type acquired as a secondary result of inflammatory lesions—tuberculosis of the cervical part of the spine, cervical lymphadenitis, arthritis, trauma, habit, poliomyelitis, or from ocular torticollis, in which the child inclined his head to prevent diplopia, and which was caused by overaction of the elevators or depressors of the eye.

Dr. Pescott finally briefly mentioned the clinical findings and treatment, which were better known than the ætiology. He said that the condition occurred almost equally on either side of the neck in male or female infants. A tumour in the sterno-mastoid muscle might or might not be noticed shortly after birth. It occurred in most of the muscle, but was circumscribed, and usually disappeared in four to six months. The torticollis usually then became evident at the age of three to four years, when the shorter neck of the infant developed into the longer neck of the child. The contracted muscle then tilted the head to the affected side and turned the chin to the opposite side, and the contracted muscle stood out like a cord. Facial asymmetry followed, and the half of the face on the affected side became smaller, shorter and flatter, the eye being lower than the other. That was accompanied by elevation of the shoulder, flattening of the chest and compensatory scoliosis. All those signs had developed in the first patient, who had been delivered by the breech, when she was first examined two years earlier. Since the lower end of the sterno-mastoid and deep fascia had been divided and intensive physiotherapy (which she was still having) had been given the signs were still improving. Dr. Pescott hoped that that would continue over the next few years. He had first examined the patient's brother two months earlier, and as far as he knew that child's birth had presented no obstetrical abnormalities. Although family photographs showed the condition to have been present for years, it was not noticed by the family. He had been treated similarly to his sister, and he also showed some of the typical signs.

DR. HAMLEY WILSON (Melbourne) said that torticollis was a disability of the scalene group, not the sterno-mastoid muscle alone. The deeper muscles must be looked at, and the ætiology was not related to myotome development. The condition was analogous to that of muscle absence in the leg with normal muscle above and below the defect.

PROFESSOR MAURICE EWING (Melbourne) said that ocular torticollis was important in the diagnosis, as it might be overlooked when a cause was sought.

Dr. Pescott said that in his cases he had cut the sterno-mastoid about the clavicle and also the deep fascia. After operation he had tried to immobilize the patients in plaster of Paris, but the splints were inadequate, and he had relied mainly on physiotherapy for post-operative treatment.

DR. J. H. COKE (Melbourne) also referred to the difficulty of post-operative immobilization. He said that plaster fixation was best, and later a Zimmer collar properly made was of use.

Injuries of the Hand: Some Principles of Technique and Treatment.

DR. M. H. B. ROBINSON discussed injuries of the hand, and showed some patients. He said that the purpose of the demonstration was to stress certain principles and techniques in the treatment of hand injuries. He made acknowledgement to past teachers and writers, especially to Dr. Fay Maclure, to Bunnell's large text-book, and to Rank and Wakefield's monograph. Dr. Robinson said that he did not hesitate to stress simple procedures and details. It was by strict attention to them that good results could be obtained. The first principle was diagnosis. Often that was obvious. He liked the division of cases into "tidy" and "untidy". Those terms explained themselves. "Tidy" wounds included clean incised wounds, chopped-off digits and stab wounds. "Untidy" injuries were caused by crushing and tearing, and by explosions. Integrity of tendons, blood vessels and nerves must be established. Fuller, detailed examination was carried out at operation. Full aseptic technique was essential for repair. The instruments required were not extensive or expensive, but all were necessary. A better job could be done with the right tools, irrespective of the surgeon's skill. The hand was a delicate and precise piece of human machinery, and precision tools were needed for its repair.

Dr. Robinson went on to say that the first step was thorough cleansing. That was most important. It meant having the hand held over a bucket and cleansing it with swabs on holders until all dirt and grease were removed from the whole hand. "Cetavlon" was used in the Ballarat hospital. He found it satisfactory. Cleansing might take ten to fifteen minutes, every one of which was well spent. Next the hand and arm were placed on a side table, and the special handstand was used. That was a great help. By the use of rubber bands unwanted digits were kept out of the way; the desired position was maintained. The surgeon then sat comfortably, and the light was focused to give a perfect view of the operative field.

Dr. Robinson then showed patients to demonstrate the following points in technique and treatment: (i) secondary suture of a flexor tendon; (ii) sites at which primary suture of flexor tendon was performed; (iii) suture of extensor tendons; (iv) free skin graft for sliced finger tip; (v) bursting injury; (vi) pedicle graft; (vii) contracted scars.

The first patient had been treated in 1947, and was shown also to illustrate the result after nine years. The flexor tendon of the little finger had been severed. Secondary suture had been performed five weeks later.

The second patient had recently had the *flexor pollicis longus* divided by a clean incised wound—he had fallen on a broken bottle. Dr. Robinson said that primary suture was permissible in that situation. The digital nerve and muscles had been repaired at the same time.

In showing the third patient, Dr. Robinson said that extensor tendons in all but very "dirty" cases could undergo primary suture and do well. The wound in the patient shown had been complicated by fractures of the fourth and fifth metacarpals. The man had a thick, hard-working hand. He was aged sixty-six years, and though good union of tendons and bones had been readily obtained, he had needed a long period of physiotherapy and occupational therapy to restore mobility.

A buzz saw had caused the injuries to the fourth patient. A whole-thickness skin graft was used on the tip of the

index finger. The mangled middle finger was filleted to give a firm and useful stump.

The fifth patient had sustained a bursting injury. The little finger had been crushed between the buffers of a railway truck. The whole finger was laid open on its palmar aspect. Tendons were exposed, but intact. The blood supply was intact. Dr. Robinson said that loose suturing only was used in such cases, as much swelling was usual. Primary healing took place, but only two weeks later stiffness was already present. Fibrosis and partial ankylosis of joints rendered the digit useless. After a trial period at work, which he advised, the finger had been amputated.

The sixth patient had had a pedicle graft. Dr. Robinson said that it required technical experience and good hospital facilities. It was reserved for the most important digits—thumb and index finger. An abdominal flap was used as being easier for nursing and less irksome for the patient. Cross-arm or cross-finger flaps were not without danger. A recent letter to THE MEDICAL JOURNAL OF AUSTRALIA emphasized that. When the hand was essential for delicate work, as in musicians and surgeons, the method could have wider indications. It was time consuming for the patient, and the nature of his work and other economic factors had to be considered.

The seventh patient had sustained cut extensor tendons and lacerations, and was shown to demonstrate a complication—a contracted scar causing disability. The area was in the web between the third and fourth fingers. Dr. Robinson said that such contracted scars should never be excised and just resutured, as they would recur. The scar should be excised thoroughly and the raw area grafted. In the case under discussion, a pattern of tinfoil was cut to the exact shape of the defect. The graft conformed exactly to it. A mould of dental composition was used to maintain perfect apposition. When grafts were sutured, the finest nylon or 6 0 silk was used.

Dr. Robinson went on to say that Bunnell's method of tendon suture was used, pull-out wire of fine stainless steel being employed, tied externally over small buttons. In that way no foreign material remained in the healed tendon.

Antibiotics, usually penicillin, were used in all cases. General anæsthesia was the rule. He was opposed to local anæsthesia in any but very minor procedures on the hand. Vasospasm was well known and a real danger in the fingers. If general anæsthesia was contraindicated, brachial plexus block had been used with success. The use of Esmarch's bandage as a tourniquet was a much debated point. It was his custom to use it for all wounds of the palm, for all "set" operations on the hand, such as secondary suture of nerves and tendons, for plastic repairs, and for operation on Dupuytren's contracture. Its use gave the bloodless field that would prevent the error, not unknown, of joining nerves to tendons. In other cases the tourniquet must be used according to the surgeon's experience and judgement. The keeping of records of hand injuries was made easier if a diagram was drawn. Finally, Dr. Robinson summarized the principles emphasized. They were: (i) A complete diagnosis was made of the nature and extent of the injuries. (ii) Repair was carried out with full aseptic technique. (iii) Thorough cleansing was most important. (iv) All care and attention to detail of technique would be rewarded by the best result possible in each case.

Medical Societies.

AUSTRALIAN LAENNEC SOCIETY.

THE annual general business meeting of the Australian Laennec Society was held at the University of Queensland, St. Lucia, Brisbane, on September 21, 1956.

The following officers were elected: *President*, Dr. John Grove; *Honorary Secretary*, Dr. R. Munro Ford; *State Representatives*, Dr. Gordon Bayliss, Dr. H. D. Sutherland and Dr. T. H. Goddard.

It was reported that an active branch of the Society had been established in Tasmania on similar lines to those existing in New South Wales, Western Australia and South Australia.

The aims of the Society, namely, to encourage and foster study in tuberculosis and thoracic diseases, were reiterated.

It was decided to establish a prize for an original essay on thoracic diseases submitted by medical undergraduates in Australia. This was to be named "The Sir Darcy Cowan Prize".

Scientific Session.

A scientific session was arranged by the Queensland Thoracic Society to coincide with the annual meeting of the Australian Laennec Society; this took place at the Chermside Chest Hospital, Brisbane. Details of various cases of tuberculosis were presented and discussed by a panel consisting of Dr. Hillary Roche, Dr. Cotter Harvey, Dr. Bruce White, Dr. Alan King and Dr. R. Munro Ford.

Dr. Athol Robertson, President of the Queensland Thoracic Society, presided, and Dr. John Grove, President of the Australian Laennec Society, delivered a short address on tuberculosis problems in Tasmania.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

MEDICAL QUALIFICATIONS.[1]

[William Redfern to Commissioner J. T. Bigge.]

Now Sir with regard to my not belonging to any Medical Society in England, Scotland or Ireland, I beg leave to say that it can make nothing against me. Few, very few medical men in those days entered into the navy other than I did—this is without diplomas from any medical or Surgical Society, as you are pleased to denominate them. And indeed if they had had those diplomas which rarely happened, they were still obliged to undergo the same examination before the Court of Examiners of the Surgeons Company. In those days it was not quite so fashionable to be dubbed an M.D. from St. Andrews where I might for the customary fee have procured one for my horse, nor to throw away the fees for a Surgeons diploma when certain lengths of service in the Army or Navy entitled them to all, or nearly all the privileges external to the College or Company. How many medical men are there in the Colony who have any other claims than to "Chalk and Grinding"—and some of them not even that—merely the fee for the St. Andrews degree of M.D. Not one of the three signatures namely Thomas Jamison Esq., Principal Surgeon, John Harris Esq Surgeon N.S.W. Corps, Wm. Bohan Asst. Surgeon N.S.W. Corps—to the certificate of qualification I now enclose and to whose examination I feel it no degradation to submit—is the signature of a member of any medical society in England, Scotland or Ireland—as they entered the Navy and Army on the same examinations as I did. I will further assert that the very person[2] who thought it a degradation to submit to the Enquiry directed by Governor Macquarie, and in the course of whose feelings you so willingly embarked, passed no other examination than I did. I do therefore consider this a most invidious attack.

Correspondence.

FATE OF FLUORIDE.

SIR: In reference to "Fate of Fluoride", published under "Current Comment" in the journal (September 8, 1956), we would like to point out that certain misconceptions may be gained by readers of this article, especially in regard to the following statements which are made: "Provided that obvious care is taken in the quantity of fluoride to be added, the procedure is, without any reasonable doubt, quite safe. Large populations exist with a water fluoride content several times as strong as that accepted as dentally desirable."

A wrong impression is liable to be gained not so much by what is said, as by what has been omitted (possibly for

[1] From the original in the Mitchell Library, Sydney.
[2] Dr. William Bland.

reasons of space) and by implications which are not in accord with the following facts, namely: (i) Fluorides occur naturally in some waters, but the chemical form in which they occur has not been fully investigated. (ii) Naturally occurring fluoride and added fluoride (artificial fluoridation) are not known to be identical as regards human metabolism. (iii) Water is not the only source of fluoride in human food and drink, since it exists in tea, coffee, fish *et cetera*. (iv) R. C. Likins, F. J. McClure and A. C. Steere, quoted in your article in question, describe the urinary excretion of fluoride. However, from the medical point of view, it is the amount retained in the human bones that matters, not the amount excreted. It is on record that the amount of fluoride present in human bones steadily increases with age (Margaret M. Murray and Dagmar C. Wilson, *Lancet*, December 7, 1946), but the precise clinical significance of this has not yet been determined. (v) In respect to the effect of fluoride on bacteria, G. E. Holm and J. M. Sherman (*J. Bact.*, November, 1921) tested the toxicity of 10 sodium salts on *Bacillus coli*; of these, sodium fluoride was the most bactericidal. One of us (P.P.) tested the effect of potassium fluoride on pure cultures of a Gram-negative bacillus obtained from carious teeth and found that ten parts per million were bactericidal, while other tests demonstrated that a dilution of three parts per million was sufficient to inhibit growth (*Brit. Dent. J.*, December 16, 1949).

F. H. Kemp and Dagmar C. Wilson (*Brit. M. J.*, May 12, 1956) state: "The storage of fluorine in bone is associated with malnutrition and seen typically among less privileged people, but lesions of similar nature may be determined by congenital or acquired renal disease in any population; in such cases the intake of fluorine need not be high."

In artificial fluoridation studies no adequate investigation has been carried out concerning the possible long-range toxic effects on sick children, on adults suffering from renal or other systemic disease, and on old patients.

Yours, etc.,

A. B. P. Amies,

Paul Pincus.

The Dental School of the University of Melbourne,
193 Spring Street,
Melbourne, C.1.
September 26, 1956.

HÆMOPHILIA SOCIETY.

Sir: We wish to direct attention of medical practitioners throughout Australia to the Hæmophilia Society. The society was formed in Melbourne two years ago by a group of hæmophiliacs and parents. It has, during its development, obtained recognition from official medical and hospital bodies and has a medical adviser and a medical advisory panel.

The principal object of the society is to further the welfare of hæmophiliacs in all ways possible. In addition it is attempting to assist the Red Cross Blood Transfusion Services in the enrolment of new blood donors and to make better known to the community the established facts about hæmophilia.

To further these objects the society publishes a quarterly bulletin, which contains information about the Society's activities and items of medical and welfare interest. Meetings are arranged for informal talks on medical, educational and social topics, and open discussions are held. Social events, including Christmas picnics and film evenings, are held, and week-end holidays are to be arranged.

A medical identity card is issued for use in emergencies, and information concerning the hæmophilias and other bleeding diseases is being published for the guidance of patients, parents and relatives; it provides a sound basis for gaining an understanding of the diseases.

With this background of experience, and because we now believe the Society is providing a need to a small but deserving section of the community, we should like our existence to be better known. We have already a number of members from various States, but would welcome membership by all known hæmophiliacs in Australia. Should membership in local areas be large enough, we feel that groups should be formed so that the important family meetings can take place.

Similar societies in Great Britain, France and the United States of America are well established and are doing valuable work. We believe the Society here can perform the same useful function.

Yours, etc.,

H. N. Acklom, President,
B. Mansfield, Secretary.

32 Spray Street,
Elwood,
Victoria.
September 10, 1956.

Obituary.

CECIL WALTER LUSCOMBE.

Dr. Cecil Walter Luscombe, whose death occurred on July 19, 1956, at Robertson, New South Wales, had been in general practice at Port Kembla since 1932. In that sphere he had achieved a measure of greatness acknowledged by all who knew him, although he never sought fame. He was born on December 7, 1899, the son of Mr. Walter F. Luscombe, a bank manager, and his wife, Mrs. A. G. Luscombe. Cecil Walter Luscombe was educated at the Maryborough Grammar School, Queensland, and at Parramatta High School. He entered the Medical School of the University of Sydney in 1917, and graduated in 1923 with the degrees of M.B., Ch.M. He practised at Abermain and Ganmain for short periods, and then settled in Port Kembla. In 1933 he married Millicent E. B. Jeffries, who died in 1943. In 1947 he married Nell Smith, of Wollongong. During his years of practice in Port Kembla he was Government Medical Officer and Senior Quarantine Officer. He was patron of the Returned Sailors, Soldiers and Airmen's Imperial League of Australia (Port Kembla), and a member of the Port Kembla Masonic Lodge and of the Port Kembla Bowling Club. He was an honorary medical officer of the Wollongong District Hospital. From 1946 to 1948 he was president of the South-Eastern Medical Association. On June 30, 1956, he retired to Robertson, where he expected to indulge his hobby of gardening; but less than three weeks later he died. He is survived by his widow and by his son John, who is studying architecture at the University of Sydney. As will be seen by the tributes that follow, Cecil Walter Luscombe can well be described as belonging to the salt of the medical profession.

Dr. Ronald A. Green writes: The other day I attended a funeral. I was a quarter of an hour late for the service at the Church of England, Port Kembla. It was a memorable service, and it is the literal truth to state that not only could I not get into the church or the grounds, but I could barely put a foot on the footpath outside. It was from this vantage point and with the aid of loud speakers in the grounds that I was able to follow the service and last rites of Cecil Walter Luscombe.

Following the service, the doctors of the south coast and nurses and sisters of Wollongong District Hospital formed a guard of honour to the mourning cars and hearse. Shops were shut, and those remaining in the town stood and raised their hats as the cortege passed.

It was a memorable service, not just because of this, or from the presence of his own profession, or of the managers of the industries, or because of the oration, but memorable because of one thing, because of the overwhelming tribute of the common man. It was a lifetime of service that had not of it the common clay of money-making, aggressive ambition, or the intellectual pride of specialism.

Cecil was essentially a humble man, and he possessed that rarest of qualities—virtue. He had the common touch and great ability. He would probably never have made the grade with our modern school system, and would have finished up in technical rather than high school; yet I suppose there was no one on the south coast whom one could better have in an emergency or to look after one's own, and certainly no better or safer surgeon.

There have been great orators and talkers, but one often does not hear of the great listeners. Cecil was the best listener I have ever known, with a tremendous sense of humour, extreme tact and an uncanny sense of getting people to talk. Extremely shy with strangers, he had courage and fixity of purpose when occasion demanded. He loved England and all things English, even to cars, bow ties and hats.

It is men of Cecil's character and type that have raised the profession to esteem and status in the public eye—affection, respect, admiration and gratitude. It is the tribute of us all, the common man, to virtue.

Vale, Cecil, may memory continue to honour you and may you rest in peace.

DR. M. MCKINNON writes: Cecil Walter Luscombe and I commenced practice within a month of each other in 1933, he at Port Kembla and I at Albion Park. Our main hospital was the Wollongong District Hospital, and as our practices were solo, we acted as anæsthetist for each other, attended each other's families, and generally shared our worries and joys. Even when assistants or partners removed the necessity for anæsthetizing, we always relied on each other's presence for anything new or difficult—cholecystectomy, prostatectomy, Cæsarean sections, thyroidectomy, radical amputation of the breast and gastrectomy gradually taking their place on Cecil's list, if not on mine. Thus I came to respect his ability and to love the man for his modesty, his willingness to help, his fondness for a joke and his courage in bereavement.

Modest himself, he disliked "cleverness" in a junior and hesitated to commit himself on a diagnosis. "I think she should be opened", he would say, and a section usually showed a condition which he set about to rectify. The thought of making a speech terrified him, and it is significant that the only paper he read to our Clinical Society was "Mistakes I Have Made"—a long recital of difficult cases gone wrong, what he did, and how he might have avoided trouble by doing something different. A favourite saying of his was: "I have never regretted operating, but several times I have been sorry I did not."

He was at the beck and call of many of us—colleagues, partners, residents—to render assistance and advice; he was never off duty to a fellow doctor or a friend, and his "friends" and "important confinements" ran to thousands. In the words of a patient: "He himself set the standard of service to us, and gradually we came to expect and demand it."

Medicine in general and surgical technique in particular were his life. His wedding present to me was a dressing bucket for my surgery.

If work was his life, cars were his delight. One he often spoke of with affection was his single-seater "Buick" of his single days. Then came a "Graham Paige", to be followed by his "Buick 8"; but by then he wondered if he could allow himself the extravagance of a "Riley", supercharged and guaranteed to do a hundred miles per hour. It was ordered from England, and impatiently awaited, I must say, by us all. The first occasion on which I saw it was in one of those situations now, fortunately, impossible. I was attending a confinement in a private house, and troublesome post-partum hæmorrhage prompted me to send a written message to be telephoned to Dr. Luscombe: "Please come and bring some 'Pitocin' with you." While I held the fundus the patient said: "Look at my hands, they're gey white." "Gey" white they were; but soon a musical exhaust note announced the arrival of Cecil in his "Riley" with his cheery: "Hello, Hello! What have we here?" My relief was equalled only by my later admiration of the overhead valve supercharged engine proudly displayed. It is some indication of his youthful enthusiasm for cars that his last one, bought a year before his death, was a red "MG".

He dearly loved a joke, especially of a practical nature, and rarely rang me without disguising his voice and giving a bogus call to an out-of-the-way spot before making himself known. Better still, he treasured many of his friends' stories of funny experiences for years, and would often ask for some special one to be told to a newcomer.

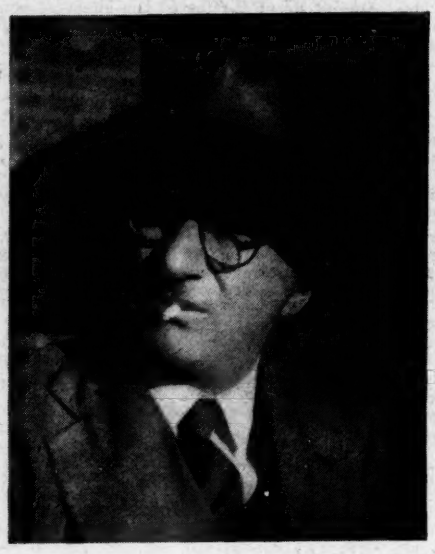
He was the very essence of tact, and would go to great trouble to avoid hurting someone's feelings. I remember how he staged a mock burglary of his surgery rather than nag a partner to make him lock up securely. In spite of this, if he felt something must be said he would say it, making a special trip to a patient at times to administer a rebuke for a child's medicine not collected, or for rudeness to a receptionist.

He shrank from public appearances; but when it was pointed out to him that it would make for the strength of the Association to have the presidency rotate, he accepted office as president of the South-Eastern Medical Association, and held it during a difficult period—from 1946 to 1948.

Each step he made forward in surgical technique was the result of careful preparation and study, often a visit to Sydney to see a chosen surgeon at work, as well as a study of books and articles on the method. One of his little jokes was to leave these reprints in the surgeon's room if they bore "with the author's compliments", and he would preface this with a bogus caption, such as "from one good surgeon to another". Needless to say, others of us added remarks not as flattering. A doctor's message book in the surgeon's room was his special playground; in fact, the variety of his outpourings on the plight of an eye specialist's cows and a truant Aberdeen Angus bull caused the sister to withdraw the book for a time.

He spent much time in improving an instrument known to us variously as "Caselberg's prodder" and the "pig stabber". It was intended for speedily introducing a drain for a cholecystectomy, being introduced from within outwards, and among the elect it is still looked for on those occasions.

His dress was always immaculate, his bow tie fastidiously knotted, his hair smoothed down with "Vaseline". His last conscious act was to straighten his hair as he was assisted to bed.



He had a cough, for which he blamed his chain smoking, but he did not allow it to interfere with his operating. Three coughs in the corridor, and all knew he was about to scrub up; a preoccupied whistling as he put on his gloves, always the same tune—"You told every little flower, you told every tree"; then the incision, with a light remark or two, and silence as he concentrated on the main part of the operation, instruments always to his hand and liking, as all nurses knew his unvaried procedure; then relaxation, a slight straightening of the back, and a scarcely audible whistle behind his mask: "Why didn't you tell me?" The anæsthetist, without looking up, recognized the signal and deepened the anæsthesia for the peritoneal stitch.

One of his quirks was a dislike of being fussed over. He could not bear anyone to help him on with his coat; many a time he would fold it and walk out of the ward with it over his arm, to make sure the sister would not assist him to put it on.

I doubt, if left to himself, whether he would ever have asked for a fee or sent an account. Certainly for years he kept no record of any work done, compensation or otherwise, depending entirely on the cheque from the works under the old contract system. He always opposed the raising of fees whenever it was suggested, and voiced the opinion that students and apprentices should be treated free.

It is hard for even us who knew him well to realize the prodigious amount of work he did. For years he attended three hundred confinements a year, as many as any two of us put together. When he took a holiday, he still did his operating and his confinements, taking only a week at a time, four times a year. Work was to him life itself, something to turn to as a friend in grief and bereavement to ease the pain. He never mentioned his own health; but we knew it had truly failed when, on the eve of his retirement, he

said: "Once even a night call was a pleasure, now it is a burden."

His judgement was a help to many of us, and his little sayings continue to guide us in the management of certain situations. The day after his funeral I was present in his stead at a transverse presentation of a twin being delivered by one of his partners. I said: "I think stimulation of uterine contractions is indicated now. Cec was always keen on intravenous 'Pitocin'." I gave it and all went well, just as it would have if he had been there.

We should be glad that his retirement was happy, though so short, and that we were privileged to know him, for, as was said by one of his patients: "His fame may not have spread far, but to us in Wollongong and Port Kembla he was a great man."

Research.

THE LIFE INSURANCE MEDICAL RESEARCH FUND OF AUSTRALIA AND NEW ZEALAND.

SINCE the Life Insurance Medical Research Fund of Australia and New Zealand was established four years ago by the Life Offices Association for Australasia the sum of approximately £100,000 has been made available to promote and assist medical research on the diseases of the heart and blood vessels. Included in this amount is a sum of £25,000 to cover awards for the current year, which have just been announced. Details of the current year's grants-in-aid are as follows:

The Department of Pharmacology, University of Sydney—for further research, under the direction of Professor R. H. Thorp, on the effect of drugs, on the membrane resting and action potentials of single cardiac muscle fibres.

The Department of Physiology, University of Sydney—for further research under the direction of Dr. P. I. Korner on hæmodynamics of valvular incompetence.

The Cardiac Department, Royal Melbourne Hospital—for research under the direction of Dr. A. J. Goble into the differentiation between acute myocardial infarction and acute myocardial ischæmia.

The Clinical Research Unit, Alfred Hospital, Melbourne—for further investigation, under the direction of Dr. T. E. Lowe, of cardiac activity by physical methods (vibrocardiography and scalar electrocardiography).

The Department of Medicine, University of Otago, Dunedin, New Zealand—for further research under the direction of Professor F. H. Smirk in (i) pathogenesis of hypertension and (ii) clinical aspects of hypertension.

The fund has also renewed a senior research fellowship held by Dr. F. B. Byrom for research in hypertension and toxæmia of pregnancy.

The College of Radiologists of Australasia.

EXAMINATIONS FOR DIPLOMA.

THE College of Radiologists of Australasia announces that examinations for Part I of the diploma qualification may be taken in diagnostic and/or therapeutic radiology, and will commence on March 4, 1957. Examinations in Part I will be held in the capital cities of States in which candidates are resident, and in New Zealand cities by arrangement.

All candidates in Australia presenting for Part II must attend in Melbourne for both written and practical examinations, which will commence on March 4, 1957, and which will, if possible, be completed within one week. New Zealand candidates are to attend at a centre to be selected in New Zealand.

Entry forms must be received at the College office in Sydney not later than January 7, 1957, accompanied by the entry fee and all the necessary certificates. Incomplete

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED SEPTEMBER 29, 1956.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	1(1)	4(2)	4(2)	..	1	..	..	..	10
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	..	..	5	..	..	..	..	..	5
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	..	..	..	..	..	..	..	..	..
Cholera	..	..	..	..	1	..	..	..	1
Chorea (St. Vitus)	2	2(1)	..	..	..	..	..	..	4
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	1(1)	8(7)	2(2)	..	..	..	..	1	12
Diphtheria	1(1)	8(6)	..	..	..	..	..	..	9
Dysentery (Bacillary)	..	3(3)	..	..	..	..	..	..	3
Encephalitis	..	4(3)	..	..	..	..	..	..	4
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	..	..	..	..
Infective Hepatitis	83(31)	72(11)	..	11(4)	2(2)	20	5	..	193
Lead Poisoning	..	..	..	..	..	..	..	..	..
Leprosy	..	..	..	..	..	..	..	..	..
Leptospirosis	..	..	7	..	..	..	..	..	7
Malaria	..	..	..	..	..	..	..	..	..
Meningococcal Infection	4(1)	11(7)	1	1(1)	..	2	..	..	19
Ophthalmia	..	..	..	..	..	..	..	..	..
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	3(1)	1(1)	1	3(2)	..	2(1)	..	..	10
Puerperal Fever	2	..	..	..	..	..	..	..	2
Rubella	..	50(27)	..	9(6)	..	2	..	..	61
Salmonella Infection	..	..	..	..	2(2)	..	..	..	2
Scarlet Fever	8(4)	15(8)	4(1)	5(3)	2(1)	..	..	..	34
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	2(1)	..	2(2)	..	..	..	4
Trachoma	..	..	..	..	..	..	..	..	..
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	44(29)	19(16)	18(7)	5(4)	5(5)	8(3)	5	..	104
Typhoid Fever	..	..	..	..	..	..	..	..	..
Typhus (Flea-, Mite- and Tick-borne)	..	..	1	..	1(1)	..	..	..	2
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

entry forms or lack of appropriate certificates will cause rejection of the candidate's application.

Entry forms, together with brochure of information containing the syllabus for the examinations, are available on request from the Secretary of the College of Radiologists of Australasia, 135 Macquarie Street, Sydney, also an additional sheet of information referable to examination details for the 1957 examinations.

The acquisition of the diploma entitles the holder to apply for membership of the College.

Notice.

OPHTHALMOLOGICAL SOCIETY OF NEW SOUTH WALES.

Cedric Cohen Memorial Prize.

The Cedric Cohen Memorial Prize, awarded on the results of the final D.O. examination at the University of Sydney, has this year been awarded for the first time. The winner of the prize is Dr. P. F. Anderson.

Medical Appointments.

Dr. E. L. Roberts has been appointed Superintendent of the Mental Hospital, Ballarat, and of the Receiving Houses, Ballarat and "Novar", Ballarat, Victoria.

Dr. G. A. Wright has been appointed Superintendent of the Mental Hospital, Mont Park, Victoria.

Dr. A. S. Ellis has been appointed Deputy Superintendent of the Mental Hospital, Mont Park, Victoria.

Dr. H. M. Bower has been appointed Superintendent of the Mental Hospital, Kew, Victoria.

Dr. W. A. J. Brady has been appointed Deputy Superintendent of the Mental Hospital, Kew, Victoria.

Dr. G. C. Young has been appointed Superintendent of the Mental Hospital, Ararat, Victoria.

Dr. G. C. Duerrheim has been appointed Deputy Superintendent of the Mental Hospital, Ararat, Victoria.

Dr. B. W. Cook has been appointed Deputy Superintendent of the Mental Hospital, Beechworth, Victoria.

Dr. C. H. Noack has been appointed Deputy Superintendent of the Mental Hospital, Sunbury, Victoria.

Dr. J. L. Fordyce has been appointed Superintendent of the Mental Hospital, Sunbury, Victoria.

Dr. J. B. Murchland has been appointed medical officer of health, District Council of Freeling, South Australia.

Nominations and Elections.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Hyams, Neville Barnett, M.B., B.S., 1953 (Univ. Sydney), 448 Peel Street, Tamworth, New South Wales.

Nolan, Thomas Patrick, M.B., B.S., 1952 (Univ. Sydney), 31 Beresford Road, Rose Bay, New South Wales.

Campion, John Frederick, M.B., B.S., 1951 (Univ. Sydney), Hiber Street, Moree, New South Wales.

Emery, Douglas Glanville, M.B., B.S., 1955 (Univ. Sydney), 7 Church Street, Pymble, New South Wales.

The undermentioned has applied for election as a member of the South Australian Branch of the British Medical Association:

Materne, Maurice Ernest, M.B., B.S., 1955 (Univ. Adelaide), Royal Adelaide Hospital, North Terrace, Adelaide.

The undermentioned has applied for election as a member of the Victorian Branch of the British Medical Association:

Toussaint, James Reginald de Vos, M.R.C.S. (England), 1936, L.R.C.P. (London), 1936, D.T.M. and H. (England), 1937, D.P.H. (Sydney), 1948, Mental Hospital, Sunbury, Victoria.

The undermentioned have been elected as members of the South Australian Branch of the British Medical Association: Smith, Sinclair Joseph, M.B., B.S., 1954 (Univ. Adelaide); Miller, John Keetley, M.B., B.S., 1954 (Univ. Adelaide); Nield, Alexander Cowell, M.B., B.S., 1955 (Univ. Adelaide).

Deaths.

The following deaths have been announced:

Laurie.—Henry William Spalding Laurie, on August 31, 1956, at Caulfield, Victoria.

Newton.—Wilberforce Stephen Newton, on October 3, 1956, at Melbourne.

Maclure.—Alfred Fay Maclure, on October 4, 1956, at Melbourne.

Diary for the Month.

Oct. 23.—New South Wales Branch, B.M.A.: Ethics Committee.
Oct. 24.—Victorian Branch, B.M.A.: Branch Council.
Oct. 26.—Queensland Branch, B.M.A.: Council Meeting.
Oct. 27.—New South Wales Branch: Country Branch Meeting at Wollongong.
Oct. 30.—Western Australian Branch, B.M.A.: General Meeting.

Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to The Medical Journal of Australia alone, unless the contrary be stated.

All communications should be addressed to the Editor, The Medical Journal of Australia, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2-3.)

Members and subscribers are requested to notify the Manager, The Medical Journal of Australia, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

Subscription Rates.—Medical students and others not receiving The Medical Journal of Australia in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rate is £5 *per annum* within Australia and the British Commonwealth of Nations, and £6 *per annum* within America and foreign countries, payable in advance.